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# 1987 Census of Manufactures

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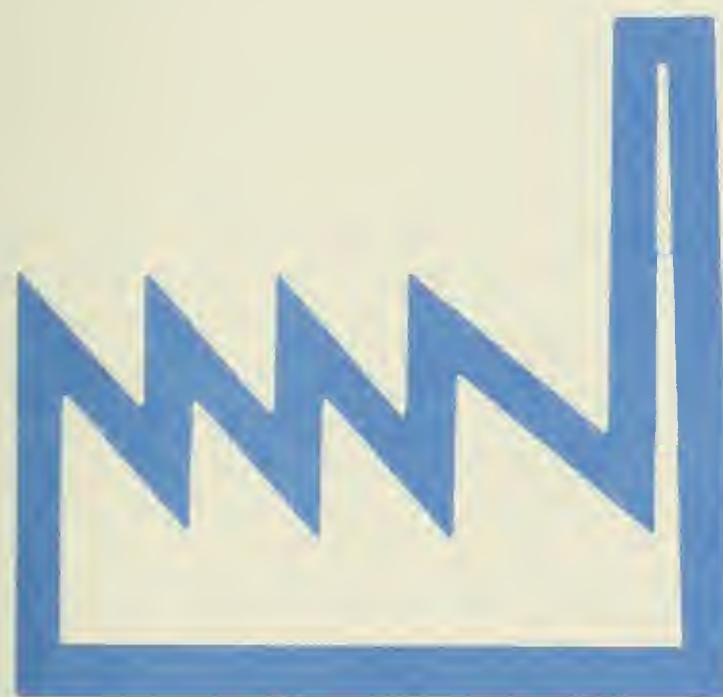
MC87-I-32E

## INDUSTRY SERIES

### Abrasive, Asbestos, and Miscellaneous Nonmetallic Mineral Products

Industries 3291, 3292, 3295, 3296, 3297, and 3299

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# ACKNOWLEDGMENTS

Many persons participated in the various activities of the 1987 Census of Manufactures.

The overall planning and review of the census operations were performed by the staff of the Office of the Assistant Director for Economic and Agriculture Censuses.

This report was prepared in the Industry Division. **John Govoni**, Assistant Chief for Census/ASM Programs, was responsible for the overall planning, management, and coordination of the census of manufactures. Planning and implementation were under the direction of **Kenneth I. Hansen** Chief, Census/ASM Durables Branch, assisted by **Mendel D. Gayle**, Section Chief, with primary data analysis responsibilities performed by **Laurie A. Perper**.

Systems and procedures for mailout, receipt, correspondence, data input, industry classification, other clerical processing, administrative record processing, and quality control, along with the associated electronic computer programs, were developed in the Economic Surveys Division, **W. Joel Richardson**, Chief.

Mailout preparation and receipt operations, clerical and analytical review activities, data keying, and geocoding review were performed by the staff of the Data Preparation Division, **Joseph S. Harris**, Chief.

Geographic coding procedures and associated computer programs were developed by the staff of the Geography Division, **Robert W. Marx**, Chief.

The computer processing systems were developed and coordinated in the Economic Programming Division, **Barry M. Cohen**, Chief. **Hyman Chansky**, Assistant Division Chief for Industry Programs, was responsible for implementation of the computer systems. The computer programs were prepared under the supervision of **George D. Anderson**, Chief, Minerals and Manufactures Branch, assisted by **Barbara Lambert**, **Gerald Turnage**, and **Gary Sheridan**.

Computer processing was performed in the Computer Services Division, **Marvin D. Raines**, Chief.

The planning, design, review, and composition of report forms were performed in the Administrative Services Division, **Michael G. Garland**, Chief.

The staff of Publications Services Division, **Walter C. Odom**, Chief, performed publication planning, design, composition, editorial review, and printing planning and procurement. **Cynthia G. Brooks** provided publication coordination and editing.

Special acknowledgment is also due the many businesses whose cooperation has contributed to the publication of these data.

If you have any questions concerning the statistics in this report, call (301) 763-7304.

# 1987

# Census of

# Manufactures

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Issued May 1990



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**Library of Congress Cataloging-in-Publication Data**

Census of manufactures (1987). Industry series.  
1987 census of manufactures. Industry series.

"MC87-I- ."

LC holdings recorded in Shelflist only.

I. United States. Bureau of the Census. II. Title.

HD9724.C4 1988a 338'.02'0973 88-600160

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For sale by Superintendent of Documents, U.S. Government  
Printing Office, Washington, DC 20402.

# INTRODUCTION

## PURPOSE AND USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source of facts about the structure and functioning of the Nation's economy. They provide essential information for government, business, industry, and the general public.

*Economic censuses furnish an important part of the framework for such composite measures as the gross national product, input-output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions.*

*Policy-making agencies of the Federal Government use the data, especially in monitoring economic activity and providing assistance to business.*

*State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.*

*Trade associations study trends in their own and competing industries, and keep their members informed of market changes.*

*Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.*

## AUTHORITY AND SCOPE

Title 13 of the United States Code (sections 131, 191, and 224) directs the Census Bureau to take the economic censuses every 5 years, covering years ending in 2 and 7. The 1987 Economic Censuses consist of the

- Census of Retail Trade
- Census of Wholesale Trade
- Census of Service Industries
- Census of Transportation
- Census of Manufactures
- Census of Mineral Industries
- Census of Construction Industries

Special programs also cover enterprise statistics and minority-owned and women-owned businesses. (The 1987 Census of Agriculture and 1987 Census of Governments are conducted separately.) The next economic censuses are scheduled to be taken in 1993 covering the year 1992.

## AVAILABILITY OF THE DATA

The results of each of the economic censuses are available in printed reports, for sale by the U.S. Government Printing Office, and on microfiche, computer tape, compact discs with read-only memory, and flexible diskettes, for sale by the Census Bureau. Order forms for all types of products are available on request from Customer Services, Census Bureau, Washington, DC 20233. A more complete description of publications being issued from this census is on the inside back cover of this document.

Census facts are also widely disseminated by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. Finally, State Data Centers in every State and Business and Industry Data Centers in many States also supply economic census statistics.

## WHAT'S NEW IN 1987

Several changes have taken place for the 1987 censuses. Data will be reported on the basis of the newly revised Standard Industrial Classification (SIC) system with selected reports including "bridge tables," linking the old and new classification systems. A new set of metropolitan areas has been adopted, and more detailed information will be available for businesses with no paid employees. For additional information on these changes, review the subsequent text.

## HISTORICAL INFORMATION

The economic censuses have been taken together as an integrated program at 5-year intervals since 1967, and before that for 1963, 1958, and 1954. Prior to that time, the individual censuses were taken separately at varying intervals.

The economic censuses trace their beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for 1840 and subsequent censuses to include mining and some commercial

activities. In 1902, Congress established a permanent Census Bureau and directed that a census of manufactures be taken every 5 years. The 1905 manufactures census was the first time a census was taken apart from the regular every-10-year population census.

The first census of business was taken in 1930, covering 1929. Initially it covered retail and wholesale trade, and construction industries, but it was broadened in 1933 to include some of the service trades.

The 1954 economic censuses were the first to be fully integrated—providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. These were the first censuses to be taken by mail, using lists of firms provided by the administrative records of other federal agencies. Since 1963, administrative records have also been used to provide basic statistics as well for very small firms, reducing or eliminating the need to send them census questionnaires. The Enterprise Statistics Program, which publishes combined data from the economic censuses, was made possible with the implementation of the integrated census program in 1954.

The range of industries covered in the economic censuses has continued to expand. The Census of Construction Industries began on a regular basis in 1967, and the scope of service industries was broadened in 1967, 1977, and 1987. The Census of Transportation began in 1963 as a set of surveys covering travel, transportation of commodities, and trucks. New for 1987 are publications reporting on business establishments engaged in several transportation industries, paralleling the data on establishments in other sectors. This is part of a gradual expansion in coverage of industries previously subjected to government regulation. The Survey of Minority-Owned Business Enterprises was first conducted as a special project in 1969 and was incorporated into the economic censuses in 1972 along with the Survey of Women-Owned Businesses.

Economic censuses have also been taken in Puerto Rico since 1909, in the Virgin Islands and Guam since 1958, and in the Northern Mariana Islands since 1982.

Statistical reports from the 1982 and earlier censuses provide historical figures for the study of long-term time series, and are available in some large libraries. All of the census data published since 1967 are still available for sale on microfiche from the Census Bureau.

## AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

While the censuses provide complete enumerations every 5 years, there are many needs for more frequent data as well. The Census Bureau conducts a number of monthly, quarterly, and annual surveys, the results of which appear in publication series such as *Current Business Reports* (retail and wholesale trade and service industries), the *Annual Survey of Manufactures*, *Current Industrial Reports*, and the *Quarterly Financial Report*. Most of these surveys, while providing more frequent

observations, yield less kind-of-business and geographic detail than the censuses. The *County Business Patterns* program offers annual statistics on the number of establishments, employment, and payroll classified by industry within each county.

## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1987 Economic Censuses and Related Statistics*. More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1987 Economic Censuses*. Contact Customer Services for information on availability.

## CENSUS OF MANUFACTURES

### General

This report, from the 1987 Census of Manufactures, is one of a series of 83 industry reports, each of which provides statistics for individual industries or groups of related industries. Additional separate reports will be issued for each State and the District of Columbia and for special subjects such as type of organization, distribution of sales by class of customer, concentration ratios and water use in manufacturing.

The industry reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, capital expenditures, product shipments, etc.

State reports present similar statistics for each State and its important metropolitan statistical areas (MSA's), counties, and places. Selected statistical totals for "all manufacturing" have been shown in the State reports for MSA's with 250 employees or more and for counties and places with 450 employees or more.

The *General Summary* report will contain industry, product class, and geographic area statistics summarized in one report. The introduction to the *General Summary* discusses, at greater length, many of the subjects described in this introduction. For example, the *General Summary* text will discuss the relationship of value added by manufacture to National income by industry of origin, the changes in statistical concepts over the history of the censuses, and the valuation problems arising from intracompany transfers between manufacturing plants of a company and between manufacturing plants and sales offices and sales branches of a company.

### Scope of Census and Definition of Manufacturing

The 1987 Census of Manufactures covers all establishments with one paid employee or more primarily engaged in manufacturing as defined in the *1987 Standard Industrial*

*Classification (SIC) Manual*<sup>1</sup>. This is the system of industrial classification developed by experts on classification in Government and private industry under the guidance of the Office of Information and Regulatory Affairs, Office of Management and Budget. This classification system is used by Government agencies as well as many organizations outside the Government.

The SIC Manual defines manufacturing as the mechanical or chemical transformation of substances or materials into new products. The assembly of component parts of products also is considered to be manufacturing if the resulting product is neither a structure nor other fixed improvement. These activities are usually carried on in plants, factories, or mills that characteristically use power-driven machines and materials-handling equipment.

Manufacturing production is usually carried on for the wholesale market, for transfers to other plants of the same company, or to the order of industrial users rather than for direct sale to the household consumer. Some manufacturers in a few industries sell chiefly at retail to household consumers through the mail, through house-to-house routes, or through salespersons. Some activities of a service nature (enameling, engraving, etc.) are included in manufacturing when they are performed primarily for trade. They are considered nonmanufacturing when they are performed primarily to the order of the household consumer.

## **Relationship Between Annual Survey of Manufactures and Census of Manufactures**

The Bureau of the Census conducts the annual survey of manufactures (ASM) in each of the 4 years between the censuses of manufactures. The ASM is a probability-based sample of approximately 56,000 establishments and collects the same industry statistics (employment, payroll, value of shipments, etc.) as the census of manufactures. In addition to collecting the information normally requested on the census form, the establishments in the ASM sample are requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, costs of purchased services, and foreign content of materials consumed. Except for supplemental labor costs, the extra ASM items are collected only in census years.

## **Establishment Basis of Reporting**

The census of manufactures is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in

distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1987, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries. This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company (see Auxiliaries).

## **Manufacturing Universe and Census Report Forms**

The 1987 Census of Manufactures universe includes approximately 350,000 establishments. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures. The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

### **1. Small Single-Establishment Companies Not Sent a Report Form**

In the 1987 Census of Manufactures, approximately 150,000 small single-establishment companies were excused from filing reports. Selection of these small establishments was done on an industry-by-industry basis and was based on annual payroll and total shipments data as well as on the industry classification codes contained in the administrative records of Federal agencies. The cutoffs were selected so that these administrative-records cases would account for no more than 3 percent of the value of shipments for all manufacturing. Generally, all single-establishment companies with less than five employees were excused, while all establishments with more than 20 employees were mailed forms.

Information on the physical location of the establishment, as well as information on payrolls, receipts (shipments), and industry classification, was obtained from the administrative records of other Federal agencies under special arrangements, which safeguarded their confidentiality. Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials

<sup>1</sup>Standard Industrial Classification Manual: 1987: For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, Stock No. 041-001-00314-2.

were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative-records files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded at the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative-record cases were only given a two- or three-digit SIC group. For the 1987 Census of Manufactures, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

## 2. Establishments Sent a Report Form

The 200,000 establishments covered in the mail canvass were divided into three groups:

a. **ASM sample establishments**—This group consisted of approximately 56,000 establishments covering all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size (see appendix, Annual Survey of Manufactures).

In a census of manufactures year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. See appendix A, section 2, for an explanation of these items.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of these many forms to canvass the 459 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant material not identified on the form.

Finally, a wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

- b. **Large and medium establishments (non-ASM)**—Approximately 84,000 establishments were included in this group. A variable cutoff, based on administrative-records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.
- c. **Small single-establishment companies (non-ASM)**—This group consisted of approximately 60,000 establishments. For those industries where application of the variable cutoff for administrative-records cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or "short" form was used. These establishments received one of the approximately 80 versions of the short form, which requested

summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics; the same data were collected on the short form as on the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the value of the n.s.k. categories.

## Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the manufacturing auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the geographic area series and in a report issued as part of the 1987 Enterprise Statistics Survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two establishments or more. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

## Industry Classification of Establishments

Each of the establishments covered in the census was classified in 1 of 459 manufacturing industries in accordance with the industry definitions in the 1987 SIC Manual. The 1987 edition of this manual represents a major revision for manufacturing industries from the 1972 edition and its 1977 supplement. Appendix A of the 1987 Manual notes the revisions in the four-digit industry levels between 1972/77 and 1987.

An industry is generally defined as a group of establishments producing the same product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively become narrower with successive additions of numerical digits. For 1987, there are 20 major groups (two-digit SIC), 139 industry groups (three-digit SIC), and 459 industries (four-digit SIC). This represents an expansion of four-digit industries from 452 in 1972/77 and a reduction of three-digit groups from 143 in 1972/77. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 11,000 products identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in operations. Refining of nonferrous metals from ore or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year (see appendix, Annual Survey of Manufactures).

However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in table 6a represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration equipment industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all

carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfers of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

## Value of Shipments for the Industry Compared With Value of Product Shipments

This report shows value of shipments data for industries and products. In tables 1a through 5a, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in table 6a represents the total value of all products shipped that are classified as primary to an industry.

## CENSUS DISCLOSURE RULES

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this information may be released even though other information is withheld.

The disclosure analysis for the industry statistics in tables 1a through 5a of this report is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed. However, the suppressed data are included in higher-level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

## SPECIAL TABULATIONS

Special tabulations of data collected in the 1987 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential

information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief, Industry Division, Bureau of the Census, Washington, DC 20233.

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

|      |   |
|------|---|
| -    | Represents zero.  |
| (D)  | Withheld to avoid disclosing data for individual companies; data are included in higher level totals. |
| (NA) | Not available.  |
| (NC) | Not comparable.   |
| (S)  | Withheld because estimate did not meet publication standards.   |
| (X)  | Not applicable.   |
| (Z)  | Less than half the unit shown.  |
| do   | Ditto.  |

|        |                                     |
|--------|-------------------------------------|
| n.e.c. | Not elsewhere classified.           |
| n.s.k. | Not specified by kind.              |
| pt.    | Part.                               |
| r      | Revised.                            |
| SIC    | Standard Industrial Classification. |

Other abbreviations, such as lb, gal, yd, doz, bbl, and tons, are used in the customary sense.

## CONTACTS FOR DATA USERS

| Subject Area                    | Contact                            | Phone          |
|---------------------------------|------------------------------------|----------------|
| Census/ASM                      |                                    |                |
| Durables                        | Kenneth Hansen                     | (301) 763-7304 |
| Nondurables                     | Michael Zampogna                   | (301) 763-2510 |
| Current Industrial Reports      |                                    |                |
| Durables                        | Malcolm Bernhardt                  | (301) 763-2518 |
| Nondurables                     | Thomas Flood                       | (301) 763-5911 |
| Import/Export Publications      |                                    |                |
| Industry Analysis and Forecasts | Foreign Trade Division             | (301) 763-5140 |
|                                 | International Trade Administration | (202) 377-4356 |

# Users' Guide for Locating Statistics in This Report by Table Number

For explanation of terms, see appendixes

| Item  | Four-digit industry statistics |                   |                     |                            |                     |   |                             | Five-digit product class and seven-digit product statistics |                    |                                   |                          |
|---|--------------------------------|-------------------|---------------------|----------------------------|---------------------|---|-----------------------------|---|--------------------|-----------------------------------|--------------------------|
|   | Historical                     | Operat-ing ratios | By geo-graphic area | Sum-mary and supple-mental | By employ-ment size | By industry and product class special-ization | Materials con-sumed by kind | Industry-product analysis                                   | Product ship-ments | Product class by geo-graphic area | Historical product class |
| Number of companies .....   | 1a                             |                   |                     | 3a                         |                     |   |                             |   |                    | *6a                               |                          |
| Number of establishments....  | 1a                             |                   |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Employment and payroll:.....  |                                |                   |                     |                            |                     |   |                             |   |                    |                                   |                          |
| Number of employees .....   | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Payroll .....   | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Supplemental labor costs .....  |                                |                   |                     |                            | 3a                  |   |                             |   |                    |                                   |                          |
| Production workers.....   | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Production- worker hours....  | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Production- worker wages....  | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Shipments, cost of materials, and value added:.....                         |                                |                   |                     |                            |                     |   |                             |   |                    |                                   |                          |
| Value of shipments<br>(four-digit) .....                                    | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   | 5b                 |                                   |                          |
| Product class shipments<br>(five-digits) .....                              |                                |                   |                     |                            |                     |   |                             |   |                    | 6a                                | 6b                       |
| Product shipments<br>(seven-digit) .....                                    |                                |                   |                     |                            |                     |   |                             |   |                    | 6a                                | 6c                       |
| Value added by<br>manufacture .....   | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Cost of materials.....  | 1a                             | 1b                |                     | 2                          | 3a                  | 4   | 5a                          |   |                    |                                   |                          |
| Fuels and electric energy .....   |                                |                   |                     |                            | 3a                  |   |                             |   |                    |                                   |                          |
| Materials consumed by kind .....  |                                |                   |                     |                            |                     |   |                             | 7   |                    |                                   |                          |
| Inventories:.....   |                                |                   |                     |                            |                     |   |                             |   |                    |                                   |                          |
| Total, end of year .....  | 1a                             |                   |                     |                            | 3a                  | 4   |                             |   |                    |                                   |                          |
| By stage of fabrication.....  |                                |                   |                     |                            | 3a                  |   |                             |   |                    |                                   |                          |
| Capital expenditures, assets, rental payments, and purchased services:..... |                                |                   |                     |                            |                     |   |                             |   |                    |                                   |                          |
| New capital expenditures....  | 1a                             |                   |                     | 2                          | 3b                  | 4   | 5a                          |   |                    |                                   |                          |
| Used plant and equipment expenditures.....                                  |                                |                   |                     |                            | 3b                  |   |                             |   |                    |                                   |                          |
| Gross assets .....  |                                |                   |                     |                            | 3b                  |   |                             |   |                    |                                   |                          |
| Depreciation.....   |                                |                   |                     |                            | 3b                  |   |                             |   |                    |                                   |                          |
| Retirements of buildings and machinery .....                                |                                |                   |                     |                            | 3b                  |   |                             |   |                    |                                   |                          |
| Rental payments.....  |                                |                   |                     |                            | 3b                  |   |                             |   |                    |                                   |                          |
| Foreign content of materials consumed.....                                  |                                |                   |                     |                            | 3c                  |   |                             |   |                    |                                   |                          |
| Purchased services.....   |                                |                   |                     |                            | 3c                  |   |                             |   |                    |                                   |                          |
| Ratios:.....  |                                |                   |                     |                            |                     |   |                             |   |                    |                                   |                          |
| Specialization.....   | 1a                             |                   |                     |                            | 3a                  |   |                             |   | 5b                 |                                   |                          |
| Coverage.....   | 1a                             |                   |                     |                            | 3a                  |   |                             |   | 5b                 |                                   |                          |

\*Number of companies with shipments of more than \$100 thousand.

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# DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

This report shows 1987 Census of Manufactures statistics for establishments classified in each of the following industries:

| SIC code and title |                                      |
|--------------------|--------------------------------------|
| 3291               | Abrasive Products                    |
| 3292               | Asbestos Products                    |
| 3295               | Minerals, Ground or Treated          |
| 3296               | Mineral Wool                         |
| 3297               | Nonclay Refractories                 |
| 3299               | Nonmetallic Mineral Products, N.E.C. |

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account when comparing industry statistics (tables 1 through 5a) with product statistics (table 6) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments classified in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-establishment companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other Federal agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions included in the 1987 Standard Industrial Classification (SIC) Manual<sup>1</sup>. The 1987 edition represents a major revision for manufacturing industries from the 1972 edition and its 1977 supplement. In addition to the 1987 SIC revision, changes were made to the product class (five-digit) and product code (seven-digit) categories. The

product class and product code comparability between the 1987 and 1982 censuses is shown in the appendixes. These appendixes present, in tabular form, the linkage from 1987 to 1982.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

## INDUSTRY 3291, ABRASIVE PRODUCTS

This industry is made up of establishments primarily engaged in manufacturing abrasive grinding wheels of natural or synthetic materials, abrasive-coated products, and other abrasive products. The cutting of grindstones, pulpstones, and whetstones at the quarry is classified in Division B, Mining.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3291, Abrasive Products, had employment of 23.4 thousand. The employment figure was 10 percent below the 26.0 thousand reported in 1982. The leading States in employment in 1987 were Massachusetts, New York, Ohio, and Minnesota, accounting for 55 percent of the industry's employment. These same States were the leaders in 1982, when they accounted for approximately 60 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$3.6 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3291 shipped \$2.7 billion of abrasive products considered primary to the industry, \$582.3 million of secondary products, and had \$347.7 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 82 percent (specialization ratio). In 1982, the specialization ratio was 83 percent.

Establishments in this industry also accounted for 94 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 95 percent. The products primary to industry 3291, no matter in what industry they

<sup>1</sup>Standard Industrial Classification Manual: 1987. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.

were produced, appear in table 6a and aggregate to \$2.9 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the abrasive products industry amounted to \$1.7 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 9 percent of total value of shipments.

## INDUSTRY 3292, ASBESTOS PRODUCTS

This industry is made up of establishments primarily engaged in manufacturing asbestos textiles, asbestos building materials, except asbestos paper, insulating materials for covering boilers and pipes, and other products composed wholly or chiefly of asbestos. Establishments primarily engaged in manufacturing asbestos paper are classified in industry 2621, and those manufacturing gaskets and packing are classified in industry 3053.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same. However, product class 32927 now includes 1972 SIC-based product classes 32928 and 32929.

In the 1987 Census of Manufactures, Industry 3292, Asbestos Products, had employment of 4.0 thousand. The employment figure was 59 percent below the 9.7 thousand reported in 1982. Compared with 1986, employment decreased 22 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses. The leading States in employment in 1987 were Virginia, Pennsylvania, Tennessee, and New York, accounting for 73 percent of the industry's employment. This represents a shift from 1982 when Pennsylvania, Texas, New York, and New Jersey accounted for approximately 50 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$386.5 million.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3292 shipped \$346.9 million of asbestos products considered primary to the industry, \$21.1 million of secondary products, and had \$18.5 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 94 percent (specialization ratio). In 1982, the specialization ratio was 92 percent.

Establishments in this industry also accounted for 89 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 91 percent. The products primary to industry 3292, no matter in what industry they were produced, appear in table 6a and aggregate to \$389.7 million. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the asbestos products industry amounted to \$185.2 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 9 percent of total value of shipments.

## INDUSTRY 3295, MINERALS, GROUND OR TREATED

This industry is made up of establishments operating without a mine or quarry and primarily engaged in crushing, grinding, pulverizing, or otherwise preparing clay ceramic and refractory minerals; barite; and miscellaneous nonmetallic minerals, except fuels. These minerals are the crude products mined by establishments of industry groups 145 and 149, and by those of industry 1479 mining barite. Also included are establishments primarily crushing slag and preparing roofing granules. The beneficiation or preparation of other minerals and metallic ores, and the cleaning and grading of coal, are classified in Division B, Mining, whether or not the operation is associated with a mine.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3295, Minerals, Ground or Treated, had employment of 8.8 thousand. The employment figure was 12 percent below the 10.0 thousand reported in 1982. The leading States in 1987 were Georgia, Pennsylvania, California, and Ohio. This represents a shift from 1982 when California, Pennsylvania, Texas, and Arkansas were the leading States.

The total value of shipments for establishments classified in this industry was \$1.4 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3295 shipped \$1.3 billion of minerals, ground or treated, products considered primary to the industry, \$60.0 million of secondary products, and had \$62.4 million of miscellaneous receipts, resales, and contract work. Thus, the ratio

of primary products to the total of both secondary and primary products shipped by establishments in the industry was 96 percent (specialization ratio). In 1982, the specialization ratio was 98 percent.

Establishments in this industry also accounted for 95 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 93 percent. The products primary to industry 3295, no matter in what industry they were produced, appear in table 6a and aggregate to \$1.3 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the minerals, ground or treated, industry amounted to \$563.9 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 9 percent of total value of shipments.

## INDUSTRY 3296, MINERAL WOOL

This industry is made up of establishments primarily engaged in manufacturing mineral wool and mineral wool insulation products made of such siliceous materials as rock, slag, and glass, or combination thereof. Establishments primarily engaged in manufacturing asbestos insulation products are classified in industry 3292, and those manufacturing textile glass fibers are classified in industry 3229.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same. However, product class 32961 now includes 1972 SIC-based product classes 32963 and 32964, and product class 32962 now includes 1972 SIC-based product classes 32965 and 32966.

In the 1987 Census of Manufactures, Industry 3296, Mineral Wool, had employment of 21.5 thousand. The employment figure was 9 percent above the 19.7 thousand reported in 1982. The leading States in employment in 1987 were Ohio, Georgia, California, and Pennsylvania. This represents a shift from 1982 when Ohio, New Jersey, Kansas, and California were the leading States.

The total value of shipments for establishments classified in this industry was \$3.3 billion.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry

3296 shipped \$3.1 billion of mineral wool products considered primary to the industry, \$126.1 million of secondary products, and had \$63.3 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 96 percent (specialization ratio). In 1982, the specialization ratio was 97 percent.

Establishments in this industry also accounted for 98 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 97 percent. The products primary to industry 3296, no matter in what industry they were produced, appear in table 6a and aggregate to \$3.1 billion. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the mineral wool industry amounted to \$1.3 billion. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 5 percent of total value of shipments.

## INDUSTRY 3297, NONCLAY REFRactories

This industry is made up of establishments primarily engaged in manufacturing refractories and crucibles made of materials other than clay. This industry includes establishments primarily engaged in manufacturing all graphite refractories, whether of carbon bond or ceramic bond. Establishments primarily engaged in manufacturing clay refractories are classified in industry 3255. Products of this industry also are collected in the Current Industrial Report MA-32C, Refractories.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3297, Nonclay Refractories, had employment of 7.7 thousand. The employment figure was 13 percent above the 6.8 thousand reported in 1982. Compared with 1986, employment increased 20 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses. The leading States in employment in 1987 were Ohio, Pennsylvania, New York, and Michigan, accounting for 57 percent of the industry's employment. This represents a shift from 1982 when Ohio, Pennsylvania, New York, and Maryland accounted for 65 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$954.5 million.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3297 shipped \$829.5 million of nonclay refractory products considered primary to the industry, \$87.7 million of secondary products, and had \$37.3 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1982, the specialization ratio was 86 percent.

Establishments in this industry also accounted for 85 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio was 82 percent. The products primary to industry 3297, no matter in what industry they were produced, appear in table 6a and aggregate to \$972.4 million. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the nonclay refractories industry amounted to \$443.5 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for between 10 and 19 percent of total value of shipments.

## INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.

This industry is made up of establishments primarily engaged in the factory production of goods made of plaster of paris and papier mache, and in manufacturing sand lime products and other nonmetallic mineral products, not elsewhere classified.

The 1987 definition of this industry is the same as that used in the 1972/7 Standard Industrial Classification (SIC) system. The SIC number and title also are the same.

In the 1987 Census of Manufactures, Industry 3299, Nonmetallic Mineral Products, N.E.C., had employment of 7.6 thousand. The employment figure was 17 percent above the 6.5 thousand reported in 1982. The leading States in employment in 1987 were California, Texas, Ohio, and New York, accounting for 39 percent of the industry's employment. This represents a shift from 1982 when New York, California, Ohio, and Pennsylvania accounted for approximately 40 percent of the industry's employment.

The total value of shipments for establishments classified in this industry was \$597.1 million.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. Industry 3299 shipped \$520.1 million of nonmetallic mineral products, not elsewhere classified, products considered primary to the industry, \$56.2 million of secondary products, and had \$20.8 million of miscellaneous receipts, resales, and contract work. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1982, the specialization ratio was 95 percent.

Establishments in this industry also accounted for 87 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1982, the coverage ratio also was 87 percent. The products primary to industry 3299, no matter in what industry they were produced, appear in table 6a and aggregate to \$597.6 million. For further explanation of specialization and coverage ratios, see table 5b and the appendixes.

The total cost of materials, services, and fuels and electric energy used by establishments classified in the nonmetallic mineral products, n.e.c., industry amounted to \$248.4 million. Data on specific materials consumed appear in table 7.

Single-establishment companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 27 percent of total value of shipments.

Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year <sup>1</sup>                                 | Com-<br>panies <sup>2</sup><br>(no.) | All establishments <sup>3</sup> |   | All employees     |                                 | Production workers |                     |                               | Value added<br>by manufac-<br>ture <sup>4</sup><br>(million<br>dollars) | Cost of<br>materials <sup>5</sup><br>(million<br>dollars) | Value of<br>shipments<br>(million<br>dollars) | New capital<br>expend-<br>itures <sup>6</sup><br>(million<br>dollars) | End-of-<br>year<br>inven-<br>tories <sup>4</sup><br>(million<br>dollars) | Ratios  |  |
|---|--------------------------------------|---------------------------------|---|-------------------|---------------------------------|--------------------|---------------------|-------------------------------|---|---|---|---|--|---|--|
|   |                                      | Total<br>(no.)                  | With 20<br>employees<br>or<br>more<br>(no.) | Number<br>(1,000) | Payroll<br>(million<br>dollars) | Number<br>(1,000)  | Hours<br>(millions) | Wages<br>(million<br>dollars) |   |   |   |   |  | Speci-<br>ciali-<br>zation <sup>7</sup><br>(per-<br>cent) | Cover-<br>age <sup>8</sup><br>(per-<br>cent) |
| <b>INDUSTRY 3291, ABRASIVE PRODUCTS</b>           |                                      |                                 |   |                   |                                 |                    |                     |                               |   |   |   |   |  |   |  |
| 1987 Census                                       | 360                                  | 405                             | 178   | 23.4              | 624.2                           | 15.5               | 31.2                | 349.9                         | 2 001.2   | 1 656.3   | 3 621.4                                       | 113.5   | 596.7  | 82  | 94   |
| 1986 ASM  | (NA)                                 | (NA)                            | (NA)  | 24.8              | 607.6                           | 16.7               | 33.5                | 338.3                         | 1 738.9   | 1 640.5   | 3 383.5                                       | 95.2  | 540.3  | (NA)  | (NA)   |
| 1985 ASM  | (NA)                                 | (NA)                            | (NA)  | 25.5              | 604.4                           | 17.1               | 33.2                | 337.8                         | 1 833.0   | 1 805.0   | 3 675.3                                       | 143.1   | 545.1  | (NA)  | (NA)   |
| 1984 ASM  | (NA)                                 | (NA)                            | (NA)  | 26.0              | 594.7                           | 17.5               | 34.8                | 336.7                         | 1 943.2   | 1 879.7   | 3 781.8                                       | 137.8   | 612.1  | (NA)  | (NA)   |
| 1983 ASM  | (NA)                                 | (NA)                            | (NA)  | 24.8              | 535.4                           | 16.5               | 31.6                | 305.2                         | 1 698.6   | 1 482.1   | 3 195.9                                       | 78.3  | 536.9  | (NA)  | (NA)   |
| 1982 Census                                       | 326                                  | 374                             | 177   | 26.0              | 531.8                           | 17.0               | 31.6                | 305.1                         | 1 451.8   | 1 277.2   | 2 750.7                                       | 96.9  | 563.1  | 83  | 95   |
| 1981 ASM  | (NA)                                 | (NA)                            | (NA)  | 31.3              | 588.3                           | 21.1               | 40.9                | 351.1                         | 1 592.7   | 1 539.4   | 3 104.4                                       | 81.9  | 527.3  | (NA)  | (NA)   |
| 1980 ASM  | (NA)                                 | (NA)                            | (NA)  | 31.0              | 523.6                           | 21.0               | 40.4                | 305.8                         | 1 462.3   | 1 336.8   | 2 769.6                                       | 123.4   | 464.0  | (NA)  | (NA)   |
| 1979 ASM  | (NA)                                 | (NA)                            | (NA)  | 32.4              | 506.3                           | 23.0               | 43.7                | 313.1                         | 1 378.5   | 1 303.6   | 2 614.0                                       | 95.0  | 441.2  | (NA)  | (NA)   |
| 1978 ASM  | (NA)                                 | (NA)                            | (NA)  | 30.4              | 454.8                           | 21.6               | 41.6                | 289.8                         | 1 197.5   | 1 071.2   | 2 198.1                                       | 61.7  | 367.5  | (NA)  | (NA)   |
| 1977 Census                                       | 353                                  | 410                             | 178   | 28.3              | 392.3                           | 20.1               | 38.5                | 241.2                         | 1 097.7   | 914.4   | 1 955.8                                       | 48.7  | 317.7  | 90  | 97   |
| 1976 ASM  | (NA)                                 | (NA)                            | (NA)  | 24.7              | 311.5                           | 17.9               | 35.0                | 194.2                         | 788.4   | 671.8   | 1 432.9                                       | 44.6  | 221.3  | (NA)  | (NA)   |
| 1975 ASM  | (NA)                                 | (NA)                            | (NA)  | 24.4              | 278.7                           | 17.3               | 33.3                | 167.5                         | 679.2   | 544.6   | 1 222.2                                       | 44.0  | 190.3  | (NA)  | (NA)   |
| 1974 ASM  | (NA)                                 | (NA)                            | (NA)  | 27.3              | 287.7                           | 20.2               | 39.2                | 185.3                         | 683.4   | 561.3   | 1 235.2                                       | 44.9  | 190.8  | (NA)  | (NA)   |
| 1973 ASM  | (NA)                                 | (NA)                            | (NA)  | 26.8              | 266.0                           | 19.0               | 37.3                | 166.6                         | 630.1   | 450.7   | 1 069.7                                       | 24.8  | 181.9  | (NA)  | (NA)   |
| 1972 Census                                       | 335                                  | 392                             | 167   | 24.5              | 229.4                           | 17.2               | 33.1                | 138.1                         | 529.6   | 361.6   | 888.1   | 17.2  | 147.9  | 93  | 88   |
| <b>INDUSTRY 3292, ASBESTOS PRODUCTS</b>           |                                      |                                 |   |                   |                                 |                    |                     |                               |   |   |   |   |  |   |  |
| 1987 Census                                       | 50                                   | 54                              | 22  | 4.0               | 98.7                            | 3.1                | 6.3                 | 70.3                          | 202.6   | 185.2   | 386.5   | 14.9  | 49.6   | 94  | 89   |
| 1986 ASM  | (NA)                                 | (NA)                            | (NA)  | 5.1               | 121.8                           | 3.9                | 7.6                 | 82.8                          | 260.6   | 219.5   | 485.9   | 23.6  | 74.0   | (NA)  | (NA)   |
| 1985 ASM  | (NA)                                 | (NA)                            | (NA)  | 6.8               | 152.9                           | 5.2                | 10.5                | 105.5                         | 318.4   | 280.3   | 607.5   | 24.1  | 114.1  | (NA)  | (NA)   |
| 1984 ASM  | (NA)                                 | (NA)                            | (NA)  | 7.1               | 156.2                           | 5.5                | 11.1                | 110.2                         | 345.8   | 304.2   | 641.8   | 21.1  | 127.8  | (NA)  | (NA)   |
| 1983 ASM  | (NA)                                 | (NA)                            | (NA)  | 8.6               | 173.7                           | 6.7                | 13.5                | 119.2                         | 385.5   | 376.0   | 750.0   | 21.2  | 134.8  | (NA)  | (NA)   |
| 1982 Census                                       | 77                                   | 96                              | 53  | 9.7               | 179.8                           | 7.4                | 14.6                | 126.6                         | 397.4   | 429.3   | 842.8   | 31.3  | 148.0  | 92  | 91   |
| 1981 ASM  | (NA)                                 | (NA)                            | (NA)  | 9.6               | 191.2                           | 7.6                | 15.4                | 136.1                         | 466.0   | 440.4   | 890.2   | 33.7  | 161.5  | (NA)  | (NA)   |
| 1980 ASM  | (NA)                                 | (NA)                            | (NA)  | 9.7               | 177.7                           | 7.9                | 16.0                | 128.1                         | 421.6   | 454.6   | 877.1   | 33.6  | 151.9  | (NA)  | (NA)   |
| 1979 ASM  | (NA)                                 | (NA)                            | (NA)  | 12.2              | 208.8                           | 10.1               | 20.8                | 155.7                         | 510.5   | 516.8   | 1 024.4                                       | 46.6  | 182.2  | (NA)  | (NA)   |
| 1978 ASM  | (NA)                                 | (NA)                            | (NA)  | 14.2              | 204.3                           | 11.4               | 23.6                | 157.0                         | 491.8   | 496.4   | 974.9   | 36.2  | 177.8  | (NA)  | (NA)   |
| 1977 Census                                       | 86                                   | 123                             | 76  | 13.9              | 179.9                           | 11.0               | 22.6                | 137.4                         | 439.3   | 448.7   | 882.1   | 26.0  | 168.0  | 92  | 81   |
| 1976 ASM  | (NA)                                 | (NA)                            | (NA)  | 16.6              | 193.1                           | 13.0               | 26.7                | 145.0                         | 512.1   | 484.1   | 988.5   | 20.1  | 182.8  | (NA)  | (NA)   |
| 1975 ASM  | (NA)                                 | (NA)                            | (NA)  | 17.3              | 189.5                           | 13.5               | 26.9                | 139.7                         | 461.0   | 437.6   | 900.1   | 23.1  | 171.1  | (NA)  | (NA)   |
| 1974 ASM  | (NA)                                 | (NA)                            | (NA)  | 21.0              | 219.3                           | 16.9               | 35.3                | 168.4                         | 489.9   | 492.7   | 963.1   | 32.4  | 183.6  | (NA)  | (NA)   |
| 1973 ASM  | (NA)                                 | (NA)                            | (NA)  | 21.3              | 204.6                           | 17.1               | 35.6                | 155.2                         | 442.0   | 382.4   | 823.6   | 29.3  | 150.5  | (NA)  | (NA)   |
| 1972 Census                                       | 87                                   | 142                             | 97  | 21.0              | 191.0                           | 16.6               | 34.5                | 142.8                         | 426.1   | 343.5   | 763.4   | 20.4  | 136.3  | 91  | 88   |
| <b>INDUSTRY 3295, MINERALS, GROUND OR TREATED</b> |                                      |                                 |   |                   |                                 |                    |                     |                               |   |   |   |   |  |   |  |
| 1987 Census                                       | 245                                  | 381                             | 108   | 8.8               | 218.4                           | 6.4                | 12.9                | 149.8                         | 834.4   | 563.9   | 1 406.2                                       | 53.2  | 190.7  | 96  | 95   |
| 1986 ASM  | (NA)                                 | (NA)                            | (NA)  | 8.2               | 201.6                           | 6.0                | 11.6                | 128.8                         | 731.3   | 510.7   | 1 261.4                                       | 54.3  | 150.5  | (NA)  | (NA)   |
| 1985 ASM  | (NA)                                 | (NA)                            | (NA)  | 7.8               | 183.5                           | 5.6                | 11.0                | 115.1                         | 676.3   | 490.2   | 1 170.5                                       | 72.0  | 164.1  | (NA)  | (NA)   |
| 1984 ASM  | (NA)                                 | (NA)                            | (NA)  | 8.8               | 187.7                           | 6.4                | 12.8                | 118.9                         | 680.0   | 585.3   | 1 259.0                                       | 48.9  | 174.9  | (NA)  | (NA)   |
| 1983 ASM  | (NA)                                 | (NA)                            | (NA)  | 10.7              | 225.7                           | 8.0                | 16.3                | 155.0                         | 723.8   | 696.0   | 1 423.6                                       | 94.7.9  | 225.7  | (NA)  | (NA)   |
| 1982 Census                                       | 279                                  | 437                             | 143   | 10.0              | 190.3                           | 7.5                | 14.4                | 129.6                         | 639.4   | 627.8   | 1 269.9                                       | 75.0  | 193.8  | 98  | 93   |
| 1981 ASM  | (NA)                                 | (NA)                            | (NA)  | 11.3              | 191.6                           | 9.2                | 18.4                | 140.8                         | 691.4   | 601.9   | 1 282.9                                       | 98.4  | 149.9  | (NA)  | (NA)   |
| 1980 ASM  | (NA)                                 | (NA)                            | (NA)  | 11.0              | 172.8                           | 9.2                | 19.4                | 131.2                         | 667.1   | 575.6   | 1 224.6                                       | 104.2   | 127.7  | (NA)  | (NA)   |
| 1979 ASM  | (NA)                                 | (NA)                            | (NA)  | 13.7              | 230.6                           | 11.3               | 24.0                | 175.2                         | 744.8   | 621.9   | 1 357.2                                       | 78.0  | 131.8  | (NA)  | (NA)   |
| 1978 ASM  | (NA)                                 | (NA)                            | (NA)  | 11.9              | 179.9                           | 9.3                | 19.4                | 129.3                         | 620.2   | 584.6   | 1 197.5                                       | 70.6  | 140.5  | (NA)  | (NA)   |
| 1977 Census                                       | 318                                  | 466                             | 151   | 11.5              | 156.3                           | 8.9                | 18.1                | 111.8                         | 479.4   | 480.6   | 957.3   | 50.2  | 116.3  | 96  | 90   |
| 1976 ASM  | (NA)                                 | (NA)                            | (NA)  | 12.4              | 144.0                           | 10.0               | 19.9                | 101.7                         | 496.3   | 381.4   | 878.5   | 77.9  | 105.2  | (NA)  | (NA)   |
| 1975 ASM  | (NA)                                 | (NA)                            | (NA)  | 11.6              | 126.5                           | 9.3                | 19.1                | 91.0                          | 379.1   | 285.0   | 660.0   | 65.8  | 86.4   | (NA)  | (NA)   |
| 1974 ASM  | (NA)                                 | (NA)                            | (NA)  | 11.8              | 117.1                           | 9.5                | 20.1                | 85.4                          | 316.1   | 291.3   | 597.8   | 50.2  | 68.8   | (NA)  | (NA)   |
| 1973 ASM  | (NA)                                 | (NA)                            | (NA)  | 10.7              | 101.7                           | 8.4                | 17.7                | 77.9                          | 283.2   | 198.2   | 461.6   | 35.1  | 45.9   | (NA)  | (NA)   |
| 1972 Census                                       | 349                                  | 488                             | 152   | 9.5               | 87.9                            | 7.6                | 16.2                | 64.6                          | 237.2   | 177.3   | 414.4   | 30.0  | 40.3   | 95  | 89   |
| <b>INDUSTRY 3296, MINERAL WOOL</b>                |                                      |                                 |   |                   |                                 |                    |                     |                               |   |   |   |   |  |   |  |
| 1987 Census                                       | 173                                  | 231                             | 109   | 21.5              | 619.4                           | 17.4               | 36.6                | 483.6                         | 1 985.6   | 1 268.8   | 3 260.3                                       | 177.6   | 242.5  | 96  | 98   |
| 1986 ASM  | (NA)                                 | (NA)                            | (NA)  | 21.9              | 624.2                           | 17.7               | 36.8                | 481.6                         | 2 021.5   | 1 300.9   | 3 314.7                                       | 160.9   | 244.0  | (NA)  | (NA)   |
| 1985 ASM  | (NA)                                 | (NA)                            | (NA)  | 21.3              | 583.1                           | 17.0               | 35.8                | 447.2                         | 1 823.0   | 1 277.9   | 3 100.6                                       | 161.7   | 229.9  | (NA)  | (NA)   |
| 1984 ASM  | (NA)                                 | (NA)                            | (NA)  | 21.4              | 542.8                           | 17.3               | 36.5                | 419.3                         | 1 733.6   | 1 241.1   | 2 964.4                                       | 131.1   | 217.8  | (NA)  | (NA)   |
| 1983 ASM  | (NA)                                 | (NA)                            | (NA)  | 19.5              | 476.2                           | 15.6               | 32.9                | 364.6                         | 1 440.7   | 1 082.0   | 2 517.6                                       | 56.4  | 194.4  | (NA)  | (NA)   |
| 1982 Census                                       | 130                                  | 179                             | 94  | 19.7              | 438.9                           | 15.5               | 31.9                | 334.2                         | 1 236.7   | 1 041.5   | 2 281.1                                       | 67.0  | 180.1  | 97  | 97   |
| 1981 ASM  | (NA)                                 | (NA)                            | (NA)  | 21.8              | 448.9                           | 17.0               | 35.2                | 344.4                         | 1 245.1   | 1 106.7   | 2 338.6                                       | 91.4  | 201.3  | (NA)  | (NA)   |
| 1980 ASM  | (NA)                                 | (NA)                            | (NA)  | 22.0              | 418.4                           | 17.7               | 37.2                | 323.0                         | 1 215.5   | 1 031.8   | 2 235.4                                       | 109.2   | 186.0  | (NA)  | (NA)   |
| 1979 ASM  | (NA)                                 | (NA)                            | (NA)  | 24.1              | 412.2                           | 19.6               | 40.8                | 323.9                         | 1 221.4   | 962.3   | 2 180.1                                       | 116.3   | 172.0  | (NA)  | (NA)   |
| 1978 ASM  | (NA)                                 | (NA)                            | (NA)  | 24.1              | 371.2                           | 19.7               | 41.1                | 289.0                         | 1 161.6   | 874.6   | 2 019.1                                       | 209.4   | 149.3  | (NA)  | (NA)   |
| 1977 Census                                       | 95                                   | 153                             | 90  | 22.6              | 313.8                           | 18.6               | 38.3</td            |                               |   |   |   |   |  |   |  |

Table 1a. Historical Statistics for the Industry: 1987 and Earlier Years—Con.

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year <sup>1</sup>  | All establishments <sup>3</sup> |             | All employees                   |                | Production workers        |                |                  | Value added by manufacture <sup>4</sup> (million dollars) | Cost of materials <sup>5</sup> (million dollars) | Value of shipments (million dollars) | New capital expenditures <sup>6</sup> (million dollars) | End-of-year inventories <sup>4</sup> (million dollars) | Ratios   |   |      |
|--|---------------------------------|-------------|---------------------------------|----------------|---------------------------|----------------|------------------|---|--|--------------------------------------|---|--|--|---|------|
|  | Companies <sup>2</sup> (no.)    | Total (no.) | With 20 employees or more (no.) | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) |   |  |                                      |   |  | Spec-<br>ciali-<br>za-<br>tion <sup>7</sup> (per-<br>cent) | Cover-<br>age <sup>8</sup> (per-<br>cent) |      |
| <b>INDUSTRY 3297, NONCLAY REFRACTORIES—Con.</b>            |                                 |             |                                 |                |                           |                |                  |   |  |                                      |   |  |  |   |      |
| 1977 Census  | 74                              | 109         | 66                              | 9.1            | 134.3                     | 6.8            | 13.5             | 92.5  | 352.1  | 336.4                                | 680.2   | 37.1   | 159.5  | 92  | 83   |
| 1976 ASM   | (NA)                            | (NA)        | (NA)                            | 9.0            | 122.8                     | 6.7            | 13.3             | 85.3  | 329.4  | 316.7                                | 643.0   | 25.6   | 152.2  | (NA)                                      | (NA) |
| 1975 ASM   | (NA)                            | (NA)        | (NA)                            | 8.9            | 111.8                     | 6.5            | 13.1             | 77.4  | 287.3  | 275.8                                | 564.9   | 29.2   | 137.2  | (NA)                                      | (NA) |
| 1974 ASM   | (NA)                            | (NA)        | (NA)                            | 10.9           | 122.7                     | 8.5            | 17.5             | 90.1  | 335.9  | 286.9                                | 609.2   | 24.8   | 132.6  | (NA)                                      | (NA) |
| 1973 ASM   | (NA)                            | (NA)        | (NA)                            | 9.2            | 96.3                      | 7.1            | 14.8             | 69.3  | 249.1  | 203.7                                | 445.0   | 16.5   | 92.0   | (NA)                                      | (NA) |
| 1972 Census  | 60                              | 90          | 60                              | 8.1            | 78.3                      | 6.0            | 12.8             | 54.5  | 191.1  | 151.1                                | 342.1   | 9.3  | 81.6   | 94  | 84   |
| <b>INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.</b> |                                 |             |                                 |                |                           |                |                  |   |  |                                      |   |  |  |   |      |
| 1987 Census  | 534                             | 543         | 89                              | 7.6            | 134.6                     | 5.7            | 10.8             | 84.9  | 351.8  | 248.4                                | 597.1   | 13.0   | 86.4   | 90  | 87   |
| 1986 ASM   | (NA)                            | (NA)        | (NA)                            | 8.0            | 152.9                     | 6.1            | 12.4             | 106.8   | 420.1  | 209.7                                | 626.2   | 24.0   | 94.6   | (NA)                                      | (NA) |
| 1985 ASM   | (NA)                            | (NA)        | (NA)                            | 9.1            | 153.6                     | 7.1            | 14.0             | 108.8   | 395.2  | 218.2                                | 606.9   | 33.0   | 97.6   | (NA)                                      | (NA) |
| 1984 ASM   | (NA)                            | (NA)        | (NA)                            | 8.0            | 124.0                     | 6.1            | 12.3             | 85.3  | 373.5  | 217.5                                | 582.3   | 28.2   | 77.2   | (NA)                                      | (NA) |
| 1983 ASM   | (NA)                            | (NA)        | (NA)                            | 4.4            | 84.8                      | 3.7            | 7.8              | 63.9  | 232.9  | 166.0                                | 392.3   | 23.5   | 62.8   | (NA)                                      | (NA) |
| 1982 Census  | 569                             | 583         | 67                              | 6.5            | 94.5                      | 4.8            | 10.0             | 63.9  | 240.3  | 177.7                                | 422.3   | 38.3   | 60.6   | 95  | 87   |
| 1981 ASM   | (NA)                            | (NA)        | (NA)                            | 9.6            | 124.3                     | 7.2            | 15.4             | 83.4  | 304.2  | 197.6                                | 500.7   | 25.3   | 40.4   | (NA)                                      | (NA) |
| 1980 ASM   | (NA)                            | (NA)        | (NA)                            | 9.7            | 122.6                     | 7.2            | 15.1             | 78.4  | 331.8  | 219.8                                | 536.1   | 127.3  | 61.7   | (NA)                                      | (NA) |
| 1979 ASM   | (NA)                            | (NA)        | (NA)                            | 9.9            | 121.3                     | 7.8            | 15.3             | 88.5  | 320.8  | 191.8                                | 508.0   | 31.4   | 43.8   | (NA)                                      | (NA) |
| 1978 ASM   | (NA)                            | (NA)        | (NA)                            | 8.0            | 95.5                      | 6.4            | 12.7             | 63.0  | 266.4  | 169.4                                | 434.8   | 36.8   | 45.0   | (NA)                                      | (NA) |
| 1977 Census  | 681                             | 696         | 70                              | 7.7            | 87.2                      | 6.2            | 11.4             | 59.1  | 224.1  | 166.6                                | 387.3   | 28.7   | 46.9   | 93  | 89   |
| 1976 ASM   | (NA)                            | (NA)        | (NA)                            | 7.8            | 79.8                      | 6.3            | 11.7             | 56.4  | 196.6  | 128.0                                | 325.3   | 31.0   | 36.4   | (NA)                                      | (NA) |
| 1975 ASM   | (NA)                            | (NA)        | (NA)                            | 6.9            | 64.4                      | 5.5            | 10.8             | 43.2  | 135.6  | 112.2                                | 253.9   | 18.4   | 29.9   | (NA)                                      | (NA) |
| 1974 ASM   | (NA)                            | (NA)        | (NA)                            | 7.8            | 61.4                      | 6.3            | 12.2             | 44.3  | 144.3  | 92.9                                 | 230.9   | 11.0   | 31.0   | (NA)                                      | (NA) |
| 1973 ASM   | (NA)                            | (NA)        | (NA)                            | 7.1            | 53.6                      | 6.0            | 11.1             | 37.5  | 133.5  | 73.1                                 | 200.2   | 9.0  | 18.0   | (NA)                                      | (NA) |
| 1972 Census  | 480                             | 491         | 81                              | 6.3            | 46.0                      | 5.2            | 9.9              | 31.9  | 104.7  | 58.7                                 | 166.5   | 5.0  | 16.1   | 94  | 90   |

<sup>1</sup>In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the Industry chapter.

<sup>2</sup>For the Census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>3</sup>Includes establishments with payroll at any time during year.

<sup>4</sup>Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

<sup>5</sup>Detailed data on materials consumed by type are shown in table 7.

<sup>6</sup>Detailed data on new machinery and equipment expenditures are provided in table 3c.

<sup>7</sup>Represents ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for establishments classified in the industry.

<sup>8</sup>Represents ratio of primary products shipped by establishments classified in industry to total shipments of such products by all manufacturing establishments, wherever classified.

<sup>a</sup>Estimates for new capital expenditures have associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year                                    | Payroll per employee (dollars) | Production workers as percent of total employment (percent) | Annual hours of production workers (number) | Average hourly earnings of production workers (dollars) | Cost of materials as percent of value of shipments (percent) | Cost of materials and payroll as percent of value of shipments (percent) | Value added per employee (dollars) | Payroll as percent of value added (percent) | Value added per production worker hour (dollars) |
|---|--------------------------------|---|---|---|--|--|------------------------------------|---|--|
| <b>INDUSTRY 3291, ABRASIVE PRODUCTS</b> |                                |   |   |   |  |  |                                    |   |  |
| 1987 Census                             | 26 675                         | 66  | 2 013                                       | 11.21   | 46   | 63   | 85 521                             | 31  | 64.14  |
| 1986 ASM                                | 24 500                         | 67  | 2 006                                       | 10.10   | 48   | 66   | 70 117                             | 35  | 51.91  |
| 1985 ASM                                | 23 701                         | 67  | 1 942                                       | 10.17   | 49   | 66   | 71 882                             | 33  | 55.21  |
| 1984 ASM                                | 22 873                         | 67  | 1 989                                       | 9.68  | 50   | 65   | 74 738                             | 31  | 55.84  |
| 1983 ASM                                | 21 588                         | 67  | 1 915                                       | 9.66  | 46   | 63   | 68 492                             | 32  | 53.75  |
| 1982 Census                             | 20 453                         | 65  | 1 859                                       | 9.66  | 46   | 66   | 55 838                             | 37  | 45.94  |
| 1981 ASM                                | 18 795                         | 67  | 1 938                                       | 8.58  | 50   | 69   | 50 885                             | 37  | 38.94  |
| 1980 ASM                                | 16 890                         | 68  | 1 924                                       | 7.57  | 48   | 67   | 47 171                             | 36  | 36.20  |
| 1979 ASM                                | 15 626                         | 71  | 1 900                                       | 7.16  | 50   | 69   | 42 546                             | 37  | 31.54  |
| 1978 ASM                                | 14 960                         | 71  | 1 926                                       | 6.97  | 49   | 69   | 39 391                             | 38  | 28.79  |
| 1977 Census                             | 13 862                         | 71  | 1 915                                       | 6.26  | 47   | 67   | 38 788                             | 36  | 28.51  |
| 1976 ASM                                | 12 611                         | 72  | 1 955                                       | 5.55  | 47   | 69   | 31 919                             | 40  | 22.53  |
| 1975 ASM                                | 11 422                         | 71  | 1 925                                       | 5.03  | 45   | 67   | 27 836                             | 41  | 20.40  |
| 1974 ASM                                | 10 538                         | 74  | 1 941                                       | 4.73  | 45   | 69   | 25 033                             | 42  | 17.43  |
| 1973 ASM                                | 9 925                          | 71  | 1 963                                       | 4.47  | 42   | 67   | 23 511                             | 42  | 16.89  |
| 1972 Census                             | 9 363                          | 70  | 1 924                                       | 4.17  | 41   | 67   | 21 616                             | 43  | 16.00  |
| <b>INDUSTRY 3292, ASBESTOS PRODUCTS</b> |                                |   |   |   |  |  |                                    |   |  |
| 1987 Census                             | 24 675                         | 77  | 2 032                                       | 11.16   | 48   | 73   | 50 650                             | 49  | 32.16  |
| 1986 ASM                                | 23 882                         | 76  | 1 949                                       | 10.89   | 45   | 70   | 51 098                             | 47  | 34.29  |
| 1985 ASM                                | 22 485                         | 76  | 2 019                                       | 10.05   | 46   | 71   | 46 824                             | 48  | 30.32  |
| 1984 ASM                                | 22 000                         | 77  | 2 018                                       | 9.93  | 47   | 72   | 48 704                             | 45  | 31.15  |
| 1983 ASM                                | 20 197                         | 78  | 2 015                                       | 8.83  | 50   | 73   | 44 826                             | 45  | 28.56  |
| 1982 Census                             | 18 536                         | 76  | 1 973                                       | 8.67  | 51   | 72   | 40 969                             | 45  | 27.22  |
| 1981 ASM                                | 19 916                         | 79  | 2 026                                       | 8.84  | 49   | 71   | 48 542                             | 41  | 30.26  |
| 1980 ASM                                | 18 319                         | 81  | 2 025                                       | 8.01  | 52   | 72   | 43 464                             | 42  | 26.35  |
| 1979 ASM                                | 17 114                         | 83  | 2 059                                       | 7.49  | 50   | 71   | 41 844                             | 41  | 24.54  |
| 1978 ASM                                | 14 387                         | 80  | 2 070                                       | 6.65  | 51   | 72   | 34 634                             | 42  | 20.84  |

See footnotes at end of table.

# Table 1b. Selected Operating Ratios for the Industry: 1987 and Earlier Years—Con.

[1987 industry definitions are the same as in the 1972/77 Standard Industrial Classification (SIC) system. Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year   | Payroll per employee (dollars) | Production workers as percent of total employment (percent) | Annual hours of production workers (number) | Average hourly earnings of production workers (dollars) | Cost of materials as percent of value of shipments (percent) | Cost of materials and payroll as percent of value of shipments (percent) | Value added per employee (dollars) | Payroll as percent of value added (percent) | Value added per production worker hour (dollars) |
|--|--------------------------------|---|---|---|--|--|------------------------------------|---|--|
| <b>INDUSTRY 3292, ASBESTOS PRODUCTS—Con.</b>               |                                |   |   |   |  |  |                                    |   |  |
| 1977 Census  | 12 942                         | 79  | 2 055                                       | 6.08  | 51   | 71   | 31 604                             | 41  | 19.44  |
| 1976 ASM   | 11 632                         | 78  | 2 054                                       | 5.43  | 49   | 69   | 30 849                             | 38  | 19.18  |
| 1975 ASM   | 10 953                         | 78  | 1 993                                       | 5.19  | 49   | 70   | 26 647                             | 41  | 17.14  |
| 1974 ASM   | 10 442                         | 80  | 2 089                                       | 4.77  | 51   | 74   | 23 329                             | 45  | 13.88  |
| 1973 ASM   | 9 605                          | 80  | 2 082                                       | 4.36  | 46   | 71   | 20 751                             | 46  | 12.42  |
| 1972 Census  | 9 095                          | 79  | 2 078                                       | 4.14  | 45   | 70   | 20 290                             | 45  | 12.35  |
| <b>INDUSTRY 3295, MINERALS, GROUND OR TREATED</b>          |                                |   |   |   |  |  |                                    |   |  |
| 1987 Census  | 24 835                         | 73  | 2 024                                       | 11.59   | 40   | 56   | 94 899                             | 26  | 64.68  |
| 1986 ASM   | 24 585                         | 73  | 1 933                                       | 11.10   | 40   | 56   | 89 183                             | 28  | 63.04  |
| 1985 ASM   | 23 525                         | 72  | 1 964                                       | 10.46   | 42   | 58   | 86 705                             | 27  | 61.48  |
| 1984 ASM   | 21 329                         | 73  | 2 000                                       | 9.29  | 46   | 61   | 77 273                             | 28  | 53.13  |
| 1983 ASM   | 21 093                         | 75  | 2 038                                       | 9.51  | 49   | 65   | 67 645                             | 31  | 44.40  |
| 1982 Census  | 19 030                         | 75  | 1 920                                       | 9.00  | 49   | 64   | 63 940                             | 30  | 44.40  |
| 1981 ASM   | 16 955                         | 81  | 2 000                                       | 7.65  | 47   | 62   | 61 186                             | 28  | 37.58  |
| 1980 ASM   | 15 709                         | 84  | 2 109                                       | 6.76  | 47   | 61   | 60 645                             | 26  | 34.39  |
| 1979 ASM   | 16 832                         | 82  | 2 124                                       | 7.30  | 46   | 63   | 54 365                             | 31  | 31.03  |
| 1978 ASM   | 15 117                         | 78  | 2 086                                       | 6.66  | 49   | 64   | 52 118                             | 29  | 31.97  |
| 1977 Census  | 13 591                         | 77  | 2 034                                       | 6.18  | 50   | 67   | 41 687                             | 33  | 26.49  |
| 1976 ASM   | 11 612                         | 81  | 1 990                                       | 5.11  | 43   | 60   | 40 024                             | 29  | 24.94  |
| 1975 ASM   | 10 905                         | 80  | 2 054                                       | 4.76  | 43   | 62   | 32 681                             | 33  | 19.85  |
| 1974 ASM   | 9 923                          | 81  | 2 116                                       | 4.25  | 49   | 68   | 26 788                             | 37  | 15.73  |
| 1973 ASM   | 9 504                          | 79  | 2 107                                       | 4.40  | 43   | 65   | 26 467                             | 36  | 16.00  |
| 1972 Census  | 9 252                          | 80  | 2 132                                       | 3.99  | 43   | 64   | 24 968                             | 37  | 14.64  |
| <b>INDUSTRY 3296, MINERAL WOOL</b>                         |                                |   |   |   |  |  |                                    |   |  |
| 1987 Census  | 28 809                         | 81  | 2 103                                       | 13.21   | 39   | 58   | 92 353                             | 31  | 54.25  |
| 1986 ASM   | 28 502                         | 81  | 2 079                                       | 13.09   | 39   | 58   | 92 306                             | 31  | 54.93  |
| 1985 ASM   | 27 375                         | 80  | 2 106                                       | 12.49   | 41   | 60   | 85 587                             | 32  | 50.92  |
| 1984 ASM   | 25 364                         | 81  | 2 110                                       | 11.49   | 42   | 60   | 81 009                             | 31  | 47.50  |
| 1983 ASM   | 24 420                         | 80  | 2 109                                       | 11.08   | 43   | 62   | 73 882                             | 33  | 43.79  |
| 1982 Census  | 22 279                         | 79  | 2 058                                       | 10.48   | 46   | 65   | 62 777                             | 35  | 38.77  |
| 1981 ASM   | 20 591                         | 78  | 2 071                                       | 9.78  | 47   | 67   | 57 115                             | 36  | 35.37  |
| 1980 ASM   | 19 018                         | 80  | 2 102                                       | 8.68  | 46   | 65   | 55 250                             | 34  | 32.67  |
| 1979 ASM   | 17 103                         | 81  | 2 082                                       | 7.94  | 44   | 63   | 50 680                             | 34  | 29.94  |
| 1978 ASM   | 15 402                         | 82  | 2 086                                       | 7.03  | 43   | 62   | 48 199                             | 32  | 28.26  |
| 1977 Census  | 13 884                         | 82  | 2 059                                       | 6.38  | 41   | 59   | 46 624                             | 30  | 27.51  |
| 1976 ASM   | 12 965                         | 82  | 2 078                                       | 5.98  | 45   | 64   | 37 808                             | 34  | 22.25  |
| 1975 ASM   | 11 613                         | 80  | 2 034                                       | 5.44  | 46   | 64   | 34 088                             | 34  | 20.92  |
| 1974 ASM   | 11 215                         | 82  | 2 106                                       | 5.09  | 44   | 65   | 30 605                             | 37  | 17.71  |
| 1973 ASM   | 10 374                         | 83  | 2 097                                       | 4.69  | 40   | 63   | 27 888                             | 37  | 16.05  |
| 1972 Census  | 9 572                          | 82  | 2 095                                       | 4.41  | 42   | 65   | 24 528                             | 39  | 14.33  |
| <b>INDUSTRY 3297, NONCLAY REFRACTORIES</b>                 |                                |   |   |   |  |  |                                    |   |  |
| 1987 Census  | 26 182                         | 73  | 2 000                                       | 11.63   | 46   | 68   | 66 351                             | 39  | 45.62  |
| 1986 ASM   | 25 421                         | 72  | 1 978                                       | 11.29   | 48   | 70   | 62 375                             | 41  | 43.87  |
| 1985 ASM   | 24 126                         | 71  | 1 956                                       | 11.27   | 49   | 69   | 59 857                             | 40  | 42.85  |
| 1984 ASM   | 22 692                         | 74  | 1 896                                       | 10.49   | 49   | 71   | 55 585                             | 41  | 39.70  |
| 1983 ASM   | 23 125                         | 73  | 1 878                                       | 11.01   | 53   | 75   | 51 482                             | 45  | 37.44  |
| 1982 Census  | 21 823                         | 68  | 1 891                                       | 10.69   | 50   | 71   | 48 985                             | 45  | 38.29  |
| 1981 ASM   | 20 468                         | 71  | 1 912                                       | 10.02   | 47   | 67   | 57 948                             | 35  | 42.79  |
| 1980 ASM   | 18 288                         | 72  | 1 943                                       | 8.82  | 49   | 68   | 50 402                             | 36  | 35.95  |
| 1979 ASM   | 16 747                         | 74  | 1 974                                       | 8.05  | 46   | 65   | 50 573                             | 33  | 34.73  |
| 1978 ASM   | 15 495                         | 76  | 1 963                                       | 7.36  | 50   | 69   | 42 276                             | 37  | 28.27  |
| 1977 Census  | 14 758                         | 75  | 1 985                                       | 6.85  | 49   | 69   | 38 692                             | 38  | 26.08  |
| 1976 ASM   | 13 644                         | 74  | 1 985                                       | 6.41  | 49   | 68   | 36 600                             | 37  | 24.77  |
| 1975 ASM   | 12 561                         | 73  | 2 015                                       | 5.91  | 49   | 69   | 32 281                             | 39  | 21.93  |
| 1974 ASM   | 11 256                         | 78  | 2 059                                       | 5.15  | 47   | 67   | 30 817                             | 37  | 19.19  |
| 1973 ASM   | 10 467                         | 77  | 2 085                                       | 4.68  | 46   | 67   | 27 076                             | 39  | 16.83  |
| 1972 Census  | 9 666                          | 74  | 2 133                                       | 4.26  | 44   | 67   | 23 593                             | 41  | 14.93  |
| <b>INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.</b> |                                |   |   |   |  |  |                                    |   |  |
| 1987 Census  | 17 711                         | 75  | 1 895                                       | 7.86  | 42   | 64   | 46 289                             | 38  | 32.57  |
| 1986 ASM   | 19 112                         | 76  | 2 033                                       | 8.61  | 33   | 58   | 52 513                             | 36  | 33.88  |
| 1985 ASM   | 16 879                         | 78  | 1 972                                       | 7.77  | 36   | 61   | 43 429                             | 39  | 28.23  |
| 1984 ASM   | 15 500                         | 76  | 2 016                                       | 6.93  | 37   | 59   | 46 688                             | 33  | 30.37  |
| 1983 ASM   | 19 272                         | 84  | 2 108                                       | 8.19  | 42   | 64   | 52 932                             | 36  | 29.86  |
| 1982 Census  | 14 538                         | 74  | 2 083                                       | 6.39  | 42   | 64   | 36 969                             | 39  | 24.03  |
| 1981 ASM   | 12 947                         | 75  | 2 139                                       | 5.42  | 39   | 64   | 31 688                             | 41  | 19.75  |
| 1980 ASM   | 12 639                         | 74  | 2 097                                       | 5.19  | 41   | 64   | 34 206                             | 37  | 21.97  |
| 1979 ASM   | 12 252                         | 79  | 1 962                                       | 5.78  | 38   | 62   | 32 404                             | 38  | 20.97  |
| 1978 ASM   | 11 937                         | 80  | 1 984                                       | 4.96  | 39   | 61   | 33 300                             | 36  | 20.98  |
| 1977 Census  | 11 324                         | 81  | 1 839                                       | 5.18  | 43   | 66   | 29 104                             | 39  | 19.66  |
| 1976 ASM   | 10 230                         | 81  | 1 857                                       | 4.82  | 39   | 64   | 25 205                             | 41  | 16.80  |
| 1975 ASM   | 9 333                          | 80  | 1 964                                       | 4.00  | 44   | 70   | 19 652                             | 47  | 12.56  |
| 1974 ASM   | 7 871                          | 81  | 1 937                                       | 3.63  | 40   | 67   | 18 500                             | 43  | 11.83  |
| 1973 ASM   | 7 549                          | 85  | 1 850                                       | 3.38  | 37   | 63   | 18 803                             | 40  | 12.03  |
| 1972 Census  | 7 301                          | 83  | 1 904                                       | 3.22  | 35   | 63   | 16 619                             | 44  | 10.58  |

Note: For qualifications of data, see footnotes on table 1a.

Table 2. Industry Statistics for Selected States: 1987 and 1982

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and geographic area                      | 1987               |             |                                 |                             |                           |                |                  |  |                                     |                                      |  | 1982                               |  |         |
|---|--------------------|-------------|---------------------------------|-----------------------------|---------------------------|----------------|------------------|--|-------------------------------------|--------------------------------------|--|------------------------------------|--|---------|
|   | All establishments |             | All employees                   |                             | Production workers        |                |                  | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | All employees <sup>2</sup> (1,000) | Value added by manufacture (million dollars) |         |
|   | E <sup>1</sup>     | Total (no.) | With 20 employees or more (no.) | Number <sup>2</sup> (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) |  |                                     |                                      |  |                                    |  |         |
| <b>INDUSTRY 3291, ABRASIVE PRODUCTS</b>           |                    |             |                                 |                             |                           |                |                  |  |                                     |                                      |  |                                    |  |         |
| United States                                     | -                  | 405         | 178                             | 23.4                        | 624.2                     | 15.5           | 31.2             | 349.9  | 2 001.2                             | 1 656.3                              | 3 621.4                                    | 113.5                              | 26.0   | 1 451.8 |
| California  | E3                 | 40          | 14                              | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | 1.0  | 48.9    |
| Connecticut                                       | -                  | 10          | 6                               | .4                          | 11.8                      | .2             | .5               | 5.1  | 23.7                                | 19.7                                 | 42.4                                       | (D)                                | .4   | 20.7    |
| Georgia   | -                  | 7           | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | AA   | (D)     |
| Illinois  | E1                 | 36          | 22                              | 2.0                         | 52.1                      | 1.3            | 2.8              | 25.9   | 148.9                               | 90.8                                 | 238.6                                      | (D)                                | 1.8  | 96.1    |
| Indiana   | E2                 | 10          | 4                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .2   | 8.9     |
| Iowa  | -                  | 2           | 1                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | BB   | (D)     |
| Massachusetts                                     | -                  | 31          | 16                              | FF                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | 5.9  | 212.4   |
| Michigan  | E2                 | 46          | 18                              | 1.0                         | 23.5                      | .7             | 1.4              | 14.3   | 73.8                                | 53.3                                 | 127.2                                      | (D)                                | 1.2  | 50.0    |
| Minnesota   | -                  | 6           | 3                               | FF                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | FF   | (D)     |
| Missouri  | -                  | 3           | 2                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | (NA)   | (NA)    |
| New Jersey  | E7                 | 22          | 13                              | .5                          | 11.0                      | .3             | .6               | 5.9  | 28.1                                | 24.7                                 | 52.6                                       | .8                                 | .5   | 21.5    |
| New York  | -                  | 40          | 15                              | 2.9                         | 76.7                      | 1.9            | 3.7              | 43.8   | 156.7                               | 168.8                                | 331.7                                      | 8.2                                | 4.3  | 163.0   |
| North Carolina                                    | E2                 | 15          | 7                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .3   | 10.1    |
| Ohio  | E1                 | 38          | 19                              | 2.7                         | 75.6                      | 1.9            | 3.9              | 40.2   | 173.6                               | 128.5                                | 294.5                                      | 8.0                                | 3.2  | 200.3   |
| Pennsylvania                                      | E2                 | 29          | 12                              | .7                          | 17.3                      | .5             | .9               | 9.9  | 43.5                                | 41.1                                 | 85.5                                       | 1.6                                | 1.0  | 38.0    |
| Texas   | -                  | 19          | 5                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .6   | 41.8    |
| Virginia  | -                  | 4           | 3                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | AA   | (D)     |
| Washington  | E1                 | 6           | 2                               | .2                          | 3.8                       | .1             | .3               | 2.8  | 9.5                                 | 4.8                                  | 13.8                                       | (D)                                | .3   | 7.6     |
| Wisconsin   | -                  | 8           | 2                               | EE                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | CC   | (D)     |
| <b>INDUSTRY 3292, ASBESTOS PRODUCTS</b>           |                    |             |                                 |                             |                           |                |                  |  |                                     |                                      |  |                                    |  |         |
| United States                                     | -                  | 54          | 22                              | 4.0                         | 98.7                      | 3.1            | 6.3              | 70.3   | 202.6                               | 185.2                                | 386.5                                      | 14.9                               | 9.7  | 397.4   |
| California  | E1                 | 10          | 3                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | CC   | (D)     |
| New Jersey  | E1                 | 2           | 1                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .8   | 48.5    |
| New York  | -                  | 2           | 2                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | CC   | (D)     |
| North Carolina                                    | -                  | 3           | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .6   | 26.7    |
| Pennsylvania                                      | -                  | 7           | 5                               | .8                          | 19.9                      | .6             | 1.3              | 13.0   | 32.5                                | 31.9                                 | 64.2                                       | 1.3                                | 2.0  | 98.0    |
| Tennessee   | -                  | 2           | 2                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | BB   | (D)     |
| Texas   | E6                 | 9           | 4                               | .2                          | 3.3                       | .1             | .2               | 2.2  | 6.7                                 | 7.7                                  | 15.5                                       | .4                                 | 1.0  | 49.8    |
| Virginia  | -                  | 2           | 2                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | CC   | (D)     |
| <b>INDUSTRY 3295, MINERALS, GROUND OR TREATED</b> |                    |             |                                 |                             |                           |                |                  |  |                                     |                                      |  |                                    |  |         |
| United States                                     | -                  | 381         | 108                             | 8.8                         | 218.4                     | 6.4            | 12.9             | 149.8  | 834.4                               | 563.9                                | 1 406.2                                    | 53.2                               | 10.0   | 639.4   |
| Arkansas  | E2                 | 7           | 3                               | .2                          | 4.1                       | .1             | .3               | 2.4  | 19.4                                | 8.9                                  | 28.5                                       | (D)                                | .5   | 58.0    |
| California  | -                  | 30          | 8                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | 1.3  | 105.0   |
| Colorado  | E2                 | 13          | 3                               | .2                          | 4.2                       | .2             | .3               | 2.7  | 15.0                                | 6.6                                  | 21.4                                       | .5                                 | .2   | 12.7    |
| Florida   | E1                 | 12          | 5                               | .3                          | 5.9                       | .2             | .4               | 3.9  | 26.8                                | 20.2                                 | 47.2                                       | .8                                 | .3   | 17.7    |
| Georgia   | -                  | 12          | 7                               | 1.0                         | 24.6                      | .7             | 1.4              | 16.8   | 88.3                                | 48.6                                 | 144.4                                      | 15.6                               | .3   | 14.6    |
| Illinois  | -                  | 19          | 9                               | .5                          | 12.4                      | .3             | .7               | 7.6  | 34.7                                | 36.5                                 | 70.6                                       | (D)                                | .4   | 19.9    |
| Indiana   | -                  | 11          | 6                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .3   | 15.6    |
| Louisiana   | -                  | 12          | 3                               | .3                          | 6.5                       | .2             | .4               | 4.3  | 21.3                                | 31.4                                 | 54.2                                       | .8                                 | .5   | 38.8    |
| Michigan  | -                  | 8           | 3                               | .4                          | 13.0                      | .3             | .7               | 10.7   | 59.6                                | 47.4                                 | 106.6                                      | (D)                                | .2   | 13.1    |
| Missouri  | -                  | 8           | 5                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .4   | 21.0    |
| New Jersey  | E1                 | 15          | 5                               | .3                          | 6.7                       | .2             | .4               | 4.1  | 29.1                                | 21.6                                 | 51.3                                       | .7                                 | .5   | 27.2    |
| New York  | -                  | 9           | 1                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .3   | 18.8    |
| Ohio  | -                  | 31          | 6                               | .5                          | 12.8                      | .4             | .8               | 8.3  | 44.5                                | 35.7                                 | 80.6                                       | 2.7                                | .4   | 22.8    |
| Pennsylvania                                      | -                  | 28          | 10                              | .9                          | 20.4                      | .7             | 1.3              | 15.9   | 64.4                                | 40.0                                 | 103.9                                      | 2.2                                | .8   | 44.9    |
| South Carolina                                    | -                  | 8           | 6                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .2   | 6.7     |
| Tennessee   | E4                 | 10          | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .2   | 7.4     |
| Texas   | E1                 | 37          | 5                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .6   | 43.1    |
| West Virginia                                     | -                  | 7           | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .3   | 14.7    |
| Wisconsin   | -                  | 7           | 2                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | AA   | (D)     |
| <b>INDUSTRY 3296, MINERAL WOOL</b>                |                    |             |                                 |                             |                           |                |                  |  |                                     |                                      |  |                                    |  |         |
| United States                                     | -                  | 231         | 109                             | 21.5                        | 619.4                     | 17.4           | 36.6             | 483.6  | 1 985.6                             | 1 268.8                              | 3 260.3                                    | 177.6                              | 19.7   | 1 236.7 |
| Alabama   | -                  | 8           | 5                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .5   | 23.9    |
| California  | -                  | 21          | 10                              | 2.0                         | 58.3                      | 1.5            | 3.4              | 45.6   | 198.8                               | 146.6                                | 347.0                                      | 6.2                                | 1.8  | 144.2   |
| Delaware  | -                  | 1           | 1                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | (NA)   | (NA)    |
| Florida   | -                  | 8           | 3                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | CC   | (D)     |
| Georgia   | -                  | 13          | 6                               | 2.3                         | 69.5                      | 1.8            | 3.8              | 52.5   | 265.3                               | 144.5                                | 412.5                                      | 18.1                               | 1.3  | 122.7   |
| Illinois  | E1                 | 11          | 4                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | .4   | 14.6    |
| Indiana   | -                  | 11          | 10                              | 1.8                         | 48.1                      | 1.4            | 2.8              | 34.0   | 142.7                               | 99.8                                 | 242.9                                      | (D)                                | 1.4  | 78.3    |
| Kansas  | -                  | 3           | 3                               | EE                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | 1.9  | 158.0   |
| Kentucky  | -                  | 4           | 3                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | (NA)   | (NA)    |
| Massachusetts                                     | E3                 | 5           | 4                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | (NA)   | (NA)    |
| Michigan  | -                  | 7           | 4                               | .6                          | 13.5                      | .5             | 1.1              | 10.5   | 30.8                                | 37.7                                 | 68.6                                       | (D)                                | .4   | 11.3    |
| Minnesota   | -                  | 5           | 4                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | CC   | (D)     |
| Mississippi                                       | -                  | 3           | 2                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | BB   | (D)     |
| New Jersey  | -                  | 7           | 3                               | 1.1                         | 33.5                      | .9             | 1.7              | 27.2   | 109.9                               | 54.1                                 | 166.0                                      | 4.5                                | 2.2  | 126.7   |
| New York  | E1                 | 8           | 3                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | CC   | (D)     |

See footnotes at end of table.

Table 2. Industry Statistics for Selected States: 1987 and 1982—Con.

[Excludes data for auxiliaries. States with 150 employees or more are shown. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and geographic area                               | 1987               |             |                                 |                             |                           |                |                  |  |                                     |                                      |  | 1982                               |  |
|--|--------------------|-------------|---------------------------------|-----------------------------|---------------------------|----------------|------------------|--|-------------------------------------|--------------------------------------|--|------------------------------------|--|
|  | All establishments |             | All employees                   |                             | Production workers        |                |                  | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | All employees <sup>2</sup> (1,000) | Value added by manufacture (million dollars) |
|  | E <sup>1</sup>     | Total (no.) | With 20 employees or more (no.) | Number <sup>2</sup> (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) |  |                                     |                                      |  |                                    |  |
| <b>INDUSTRY 3296, MINERAL WOOL—Con.</b>                    |                    |             |                                 |                             |                           |                |                  |  |                                     |                                      |  |                                    |  |
| North Carolina   | E1                 | 7           | 3                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | (NA)   |
| Ohio   | -                  | 20          | 12                              | FF                          | (D)                       | (D)            | (D)              | 41.9   | 172.3                               | 102.9                                | 274.2                                      | 3.5                                | 209.2  |
| Pennsylvania   | -                  | 20          | 10                              | 1.9                         | 52.3                      | 1.6            | 3.2              | 32.5   | 135.3                               | 93.4                                 | 226.8                                      | 1.5                                | 81.6   |
| Texas  | -                  | 24          | 9                               | 1.3                         | 40.3                      | 1.1            | 2.3              |  |                                     |                                      |  | 8.7                                | 82.3   |
| West Virginia  | -                  | 1           | 1                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | BB                                 | (D)  |
| Wisconsin  | -                  | 5           | 2                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | (NA)   |
| <b>INDUSTRY 3297, NONCLAY REFRactories</b>                 |                    |             |                                 |                             |                           |                |                  |  |                                     |                                      |  |                                    |  |
| United States  | E1                 | 135         | 79                              | 7.7                         | 201.6                     | 5.6            | 11.2             | 130.3  | 510.9                               | 443.5                                | 954.5                                      | 16.3                               | 6.8  |
| California   | -                  | 6           | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | (NA)   |
| Georgia  | E4                 | 4           | 2                               | .2                          | 4.6                       | .2             | .4               | 3.1  | 5.0                                 | 10.5                                 | 15.9                                       | (D)                                | (NA)   |
| Illinois   | E2                 | 7           | 5                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | .2                                 | 12.7   |
| Indiana  | E1                 | 7           | 3                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | BB                                 | (D)  |
| Kentucky   | -                  | 6           | 2                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | BB                                 | (D)  |
| Michigan   | -                  | 7           | 5                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | BB                                 | (D)  |
| Missouri   | -                  | 3           | 3                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | (NA)   |
| New Jersey   | -                  | 3           | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | (NA)   |
| New York   | -                  | 7           | 4                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | CC                                 | (D)  |
| North Carolina   | -                  | 2           | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (D)                                | (NA)   |
| Ohio   | E2                 | 24          | 14                              | 1.6                         | 42.2                      | 1.1            | 2.4              | 26.6   | 117.0                               | 105.1                                | 219.1                                      | (D)                                | 1.8  |
| Pennsylvania   | E1                 | 22          | 15                              | 1.5                         | 40.3                      | 1.1            | 2.2              | 26.5   | 106.3                               | 94.0                                 | 203.7                                      | 5.1                                | 64.4   |
| West Virginia  | E1                 | 3           | 3                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | AA                                 | (D)  |
| <b>INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.</b> |                    |             |                                 |                             |                           |                |                  |  |                                     |                                      |  |                                    |  |
| United States  | E2                 | 543         | 89                              | 7.6                         | 134.6                     | 5.7            | 10.8             | 84.9   | 351.8                               | 248.4                                | 597.1                                      | 13.0                               | 6.5  |
| California   | E4                 | 89          | 15                              | EE                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | CC                                 | (D)  |
| Colorado   | E5                 | 11          | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | .3                                 | 8.8  |
| Florida  | E5                 | 55          | 6                               | .5                          | 7.5                       | .3             | .6               | 4.4  | 20.6                                | 12.5                                 | 33.1                                       | (D)                                | .3   |
| Georgia  | E3                 | 14          | 3                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | 12.2   |
| Illinois   | -                  | 19          | 4                               | .5                          | 8.4                       | .4             | .7               | 4.4  | 20.8                                | 9.2                                  | 29.9                                       | (D)                                | BB   |
| Massachusetts  | E1                 | 14          | 4                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | (NA)   |
| Michigan   | E2                 | 15          | 2                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | (NA)                               | (NA)   |
| Missouri   | E1                 | 17          | 2                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | .2                                 | 6.6  |
| New Jersey   | E1                 | 20          | 6                               | BB                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | AA                                 | (D)  |
| New York   | E4                 | 35          | 5                               | .5                          | 9.0                       | .4             | .8               | 6.0  | 23.0                                | 9.9                                  | 33.1                                       | .7                                 | 55.7   |
| Ohio   | E2                 | 29          | 7                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | .4                                 | 14.3   |
| Oklahoma   | E3                 | 11          | 3                               | .2                          | 2.6                       | .1             | .2               | 1.3  | 9.6                                 | 5.7                                  | 15.3                                       | (D)                                | (NA)   |
| Pennsylvania   | E2                 | 27          | 2                               | .2                          | 4.2                       | .2             | .3               | 2.5  | 8.8                                 | 8.7                                  | 17.9                                       | .8                                 | 20.7   |
| Texas  | E1                 | 38          | 4                               | CC                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | AA                                 | (D)  |
| Virginia   | -                  | 4           | 3                               | AA                          | (D)                       | (D)            | (D)              | (D)  | (D)                                 | (D)                                  | (D)  | AA                                 | (D)  |

Note: For qualifications of data, see footnotes on table 1a.

<sup>1</sup>Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other Government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown for those States where estimated value of shipments data based on administrative-record data account for 10 percent or more of figure shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

<sup>2</sup>Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment-size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

Table 3a. Summary Statistics for the Industry: 1987

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Item  | Abrasive products (SIC 3291) | Asbestos products (SIC 3292) | Minerals, ground or treated (SIC 3295) | Mineral wool (SIC 3296) | Nonclay refractories (SIC 3297) | Nonmetallic mineral products, n.e.c. (SIC 3299) |
|---|------------------------------|------------------------------|--|-------------------------|---------------------------------|---|
| Companies   | number                       | 360                          | 50                                     | 245                     | 173                             | 99  |
| All establishments                                  | do                           | 405                          | 54                                     | 381                     | 231                             | 135   |
| With 1 to 19 employees                              | do                           | 227                          | 32                                     | 273                     | 122                             | 454   |
| With 20 to 99 employees                             | do                           | 139                          | 14                                     | 94                      | 59                              | 53  |
| With 100 employees or more                          | do                           | 39                           | 8                                      | 14                      | 50                              | 26  |
| Employment and labor costs:                         |                              |                              |  |                         |                                 |   |
| Employees   | 1,000                        | 23.4                         | 4.0                                    | 8.8                     | 21.5                            | 7.7   |
| Compensation, total                                 | mil dol.                     | 789.3                        | 124.2                                  | 277.3                   | 764.7                           | 258.5   |
| Annual payroll                                      | do                           | 624.2                        | 98.7                                   | 218.4                   | 619.4                           | 201.6   |
| Fringe benefits                                     | do                           | 165.0                        | 25.5                                   | 58.9                    | 145.3                           | 56.9  |
| Social Security and other legally required payments | do                           | 60.8                         | 12.3                                   | 23.7                    | 63.8                            | 24.6  |
| Employer payments and other programs                | do                           | 104.3                        | 13.1                                   | 35.2                    | 81.6                            | 32.4  |

See footnotes at end of table.

Table 3a. Summary Statistics for the Industry: 1987—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Item  | Abrasive products (SIC 3291) | Asbestos products (SIC 3292) | Minerals, ground or treated (SIC 3295) | Mineral wool (SIC 3296) | Nonclay refractories (SIC 3297) | Nonmetallic mineral products, n.e.c. (SIC 3299) |
|---|------------------------------|------------------------------|--|-------------------------|---------------------------------|---|
| Production workers:                                       |                              |                              |  |                         |                                 |   |
| Average for year  | 1,000                        | 15.5                         | 3.1                                    | 6.3                     | 17.4                            | 5.6   |
| March   | do                           | 15.4                         | 3.0                                    | 6.2                     | 17.0                            | 5.6   |
| May   | do                           | 15.3                         | 3.0                                    | 6.3                     | 17.4                            | 5.6   |
| August  | do                           | 15.5                         | 3.1                                    | 6.4                     | 17.5                            | 5.6   |
| November  | do                           | 15.5                         | 3.2                                    | 6.4                     | 17.5                            | 5.8   |
| Hours   | millions                     | 31.2                         | 6.3                                    | 12.9                    | 36.6                            | 11.2  |
| January to March  | do                           | 7.6                          | 1.4                                    | 3.1                     | 8.9                             | 2.6   |
| April to June   | do                           | 7.8                          | 1.5                                    | 3.2                     | 9.1                             | 2.8   |
| July to September   | do                           | 7.7                          | 1.6                                    | 3.3                     | 9.1                             | 2.7   |
| October to December                                       | do                           | 8.0                          | 1.7                                    | 3.3                     | 9.5                             | 2.8   |
| Wages   | mil dol                      | 349.9                        | 70.3                                   | 149.8                   | 483.6                           | 130.3   |
| Value added by manufacture                                | do                           | 2 001.2                      | 202.6                                  | 834.4                   | 1 985.6                         | 510.9   |
| Cost of materials <sup>1</sup>                            | do                           | 1 656.3                      | 185.2                                  | 563.9                   | 1 268.8                         | 443.5   |
| Materials, parts, containers, etc., consumed <sup>2</sup> | do                           | 1 384.1                      | 157.4                                  | 434.9                   | 951.1                           | 367.5   |
| Resales   | do                           | 187.0                        | (D)                                    | 11.9                    | 47.0                            | 29.6  |
| Fuels   | do                           | 19.7                         | 4.7                                    | 53.5                    | 114.7                           | 18.7  |
| Purchased electricity                                     | do                           | 38.3                         | 7.8                                    | 47.3                    | 140.6                           | 20.3  |
| Contract work   | do                           | 27.2                         | (D)                                    | 16.3                    | 15.4                            | 7.4   |
| Quantity of electric energy used for heat and power:      |                              |                              |  |                         |                                 |   |
| Purchased   | mil kWh                      | 783.1                        | 138.8                                  | 961.4                   | 3 250.2                         | 395.8   |
| Generated less sold                                       | do                           | (D)                          | —                                      | (D)                     | —                               | —   |
| Total value of shipments                                  | mil dol                      | 3 621.4                      | 386.5                                  | 1 406.2                 | 3 260.3                         | 954.5   |
| Primary products  | do                           | 2 691.4                      | 346.9                                  | 1 283.8                 | 3 070.9                         | 829.5   |
| Secondary products  | do                           | 582.3                        | 21.1                                   | 60.0                    | 126.1                           | 87.7  |
| Miscellaneous receipts, total                             | do                           | 347.7                        | 18.5                                   | 62.4                    | 63.3                            | 37.3  |
| Value of resales  | do                           | 337.5                        | (D)                                    | 16.7                    | 57.2                            | 34.3  |
| Contract receipts   | do                           | 8.8                          | —                                      | 22.7                    | (D)                             | (D)   |
| Other miscellaneous receipts                              | do                           | 1.4                          | (D)                                    | 23.0                    | (D)                             | (D)   |
| Inventories by stage of fabrication:                      |                              |                              |  |                         |                                 |   |
| Beginning of 1987   | mil dol                      | 558.4                        | 47.2                                   | 205.8                   | 249.7                           | 187.9   |
| Finished goods  | do                           | 264.3                        | 24.0                                   | 73.6                    | 149.5                           | 87.3  |
| Work in process   | do                           | 155.1                        | 13.4                                   | 46.9                    | 12.4                            | 24.9  |
| Materials and supplies                                    | do                           | 139.0                        | 9.8                                    | 85.3                    | 87.8                            | 75.7  |
| End of 1987   | do                           | 596.7                        | 49.6                                   | 190.7                   | 242.5                           | 189.8   |
| Finished goods  | do                           | 253.0                        | 23.7                                   | 73.1                    | 143.7                           | 84.0  |
| Work in process   | do                           | 202.5                        | 15.1                                   | 39.4                    | 12.2                            | 28.1  |
| Materials and supplies                                    | do                           | 141.2                        | 10.8                                   | 78.1                    | 86.6                            | 77.6  |
| Primary product specialization ratio                      | percent                      | 82                           | 94                                     | 96                      | 96                              | 90  |
| Coverage ratio  | do                           | 94                           | 89                                     | 95                      | 98                              | 85  |

Note: For qualifications of data, see footnotes on table 1a.

<sup>1</sup>Data on purchased services for the repair of buildings and machinery and for communication services are not included in cost of materials, etc., but are shown in table 3c.

<sup>2</sup>Data on materials consumed by type are shown in table 7. Data on amount purchased or transferred from foreign sources are shown in table 3c.

Table 3b. Gross Book Value of Depreciable Assets, Capital Expenditures, Retirements, Depreciation, and Rental Payments: 1987

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Item                                    | Abrasive products (SIC 3291) | Asbestos products (SIC 3292) | Minerals, ground or treated (SIC 3295) | Mineral wool (SIC 3296) | Nonclay refractories (SIC 3297) | Nonmetallic mineral products, n.e.c. (SIC 3299) |
|---|------------------------------|------------------------------|--|-------------------------|---------------------------------|---|
| Gross book value of depreciable assets: |                              |                              |  |                         |                                 |   |
| Total:                                  |                              |                              |  |                         |                                 |   |
| Beginning of year                       | 1 270.7                      | 149.5                        | 957.8                                  | 1 790.7                 | 366.2                           | 314.2   |
| New capital expenditures <sup>1</sup>   | 113.5                        | 14.9                         | 53.2                                   | 177.6                   | 16.3                            | 13.0  |
| Used capital expenditures               | 9.5                          | .4                           | 7.1                                    | 7.1                     | 1.3                             | 1.5   |
| Retirements                             | 59.3                         | 6.9                          | 19.1                                   | 95.0                    | 12.2                            | 3.4   |
| End of year                             | 1 334.4                      | 157.9                        | 999.0                                  | 1 880.4                 | 371.6                           | 325.3   |
| Buildings and other structures:         |                              |                              |  |                         |                                 |   |
| Beginning of year                       | 327.0                        | 29.7                         | 134.1                                  | 350.9                   | 96.7                            | 74.0  |
| New capital expenditures                | 11.7                         | .9                           | 5.3                                    | 18.7                    | 2.4                             | 2.3   |
| Used capital expenditures               | 1.2                          | .1                           | 1.1                                    | 2.3                     | .3                              | .1  |
| Retirements                             | 4.4                          | 1.2                          | 2.2                                    | 6.3                     | 2.6                             | 1.1   |
| End of year                             | 335.4                        | 29.4                         | 138.3                                  | 365.7                   | 96.8                            | 75.4  |
| Machinery and equipment:                |                              |                              |  |                         |                                 |   |
| Beginning of year                       | 943.7                        | 119.8                        | 823.7                                  | 1 439.8                 | 269.5                           | 240.1   |
| New capital expenditures <sup>1</sup>   | 101.9                        | 13.9                         | 47.8                                   | 158.8                   | 13.9                            | 10.7  |
| Used capital expenditures               | 8.3                          | .4                           | 5.9                                    | 4.8                     | 1.0                             | 1.3   |
| Retirements                             | 54.8                         | 5.7                          | 16.8                                   | 88.8                    | 9.7                             | 2.3   |
| End of year                             | 999.0                        | 128.4                        | 860.6                                  | 1 514.6                 | 274.8                           | 249.9   |
| Depreciation charges during 1987:       |                              |                              |  |                         |                                 |   |
| Total                                   | 99.5                         | 8.9                          | 67.4                                   | 138.2                   | 23.2                            | 20.0  |
| Buildings and other structures          | 15.6                         | 1.2                          | 6.0                                    | 16.4                    | 3.9                             | 3.3   |
| Machinery and equipment                 | 83.9                         | 7.7                          | 61.4                                   | 121.7                   | 19.2                            | 16.8  |
| Rental payments:                        |                              |                              |  |                         |                                 |   |
| Total                                   | 27.5                         | 2.9                          | 8.2                                    | 15.6                    | 3.8                             | 6.7   |
| Buildings and other structures          | 8.9                          | 1.1                          | 3.4                                    | 4.7                     | 1.8                             | 3.5   |
| Machinery and equipment                 | 18.6                         | 1.8                          | 4.8                                    | 10.9                    | 2.0                             | 3.2   |

Note: Retirements and depreciation data for establishments not included in the ASM sample were extrapolated from the historical ratio of retirements or depreciation to assets. These ratios were developed at the industry level.

<sup>1</sup>Data on new machinery and equipment expenditures by type are provided in table 3c.

Table 3c. Supplemental Industry Statistics Based on Sample Estimates: 1987

(For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes)

| Item   | Abrasive products<br>(SIC 3291) |  | Asbestos products<br>(SIC 3292)  |  | Minerals, ground or treated<br>(SIC 3295)                              |  |  |
|--|---------------------------------|--|--|--|--|--|--|
|  | Amount<br>(million<br>dollars)  | Relative<br>standard<br>error of<br>estimate <sup>1</sup><br>(percent) | Amount<br>(million<br>dollars)   | Relative<br>standard<br>error of<br>estimate <sup>1</sup><br>(percent) | Amount<br>(million<br>dollars)   | Relative<br>standard<br>error of<br>estimate <sup>1</sup><br>(percent) |  |
| Purchased services:  |                                 |  |  |  |  |  |  |
| Cost of purchased services for the repair of—                        |                                 |  |  |  |  |  |  |
| Buildings and other structures                                       | 5.2                             | (X)  | .4   | (X)  | (S)  | (X)  |  |
| Response coverage ratio (percent) <sup>2</sup>                       | 69.1                            | (X)  | 64.2   | (X)  | (S)  | (X)  |  |
| Machinery  | 20.9                            | (X)  | 4.1  | (X)  | (S)  | (X)  |  |
| Response coverage ratio (percent) <sup>2</sup>                       | 80.9                            | (X)  | 64.2   | (X)  | (S)  | (X)  |  |
| Cost of purchased communication services                             | 6.9                             | (X)  | .7   | (X)  | (S)  | (X)  |  |
| Response coverage ratio (percent) <sup>2</sup>                       | 72.6                            | (X)  | 64.2   | (X)  | (S)  | (X)  |  |
| New machinery and equipment expenditures                             | 101.9                           | (X)  | 13.9   | (X)  | 47.8   | (X)  |  |
| Automobiles, trucks, etc., for highway use                           | 2.3                             | 21   | .1   | 4  | .8   | 13   |  |
| Computers and peripheral data processing equipment                   | 3.7                             | 18   | 2.2  | 2  | .2   | 41   |  |
| All other  | 95.9                            | 1  | 11.6   | 1  | 46.8   | 1  |  |
| Adjustment ratio <sup>3</sup>  | 1.1                             | (X)  | 1.3  | (X)  | 1.4  | (X)  |  |
| Cost of materials, components, parts, etc., used                     | 1 384.1                         | (X)  | 157.4  | (X)  | 434.9  | (X)  |  |
| Materials purchased or transferred from foreign sources <sup>4</sup> | (S)                             | 25   | 8.7  | 5  | (S)  | 15   |  |
| Materials purchased or transferred from domestic sources             | (S)                             | 6  | 148.8  | 1  | (S)  | 3  |  |
| Adjustment ratio <sup>3</sup>  | (S)                             | (X)  | 1.4  | (X)  | (S)  | (X)  |  |
| Item   |                                 | Mineral wool<br>(SIC 3296)   |  | Nonclay refractories<br>(SIC 3297)                                     |  | Nonmetallic mineral products, n.e.c.<br>(SIC 3299)                     |  |
|  |                                 | Amount<br>(million<br>dollars)   | Relative<br>standard<br>error of<br>estimate <sup>1</sup><br>(percent) | Amount<br>(million<br>dollars)   | Relative<br>standard<br>error of<br>estimate <sup>1</sup><br>(percent) | Amount<br>(million<br>dollars)   | Relative<br>standard<br>error of<br>estimate <sup>1</sup><br>(percent) |
| Purchased services:  |                                 |  |  |  |  |  |  |
| Cost of purchased services for the repair of—                        |                                 |  |  |  |  |  |  |
| Buildings and other structures                                       | 9.2                             | (X)  | 1.3  | (X)  | (S)  | (X)  |  |
| Response coverage ratio (percent) <sup>2</sup>                       | 83.7                            | (X)  | 57.7   | (X)  | (S)  | (X)  |  |
| Machinery  | 56.6                            | (X)  | 6.8  | (X)  | (S)  | (X)  |  |
| Response coverage ratio (percent) <sup>2</sup>                       | 86.2                            | (X)  | 61.4   | (X)  | (S)  | (X)  |  |
| Cost of purchased communication services                             | 4.3                             | (X)  | 1.3  | (X)  | .6   | (X)  |  |
| Response coverage ratio (percent) <sup>2</sup>                       | 85.0                            | (X)  | 68.7   | (X)  | 53.2   | (X)  |  |
| New machinery and equipment expenditures                             | 158.8                           | (X)  | 13.9   | (X)  | 10.7   | (X)  |  |
| Automobiles, trucks, etc., for highway use                           | .8                              | 9  | (Z)  | 14   | .3   | 17   |  |
| Computers and peripheral data processing equipment                   | 3.1                             | 5  | .3   | 13   | .7   | 19   |  |
| All other  | 155.0                           | 1  | 13.5   | 1  | 9.7  | 2  |  |
| Adjustment ratio <sup>3</sup>  | 2.0                             | (X)  | 1.6  | (X)  | 1.9  | (X)  |  |
| Cost of materials, components, parts, etc., used                     | 951.1                           | (X)  | 367.5  | (X)  | 201.7  | (X)  |  |
| Materials purchased or transferred from foreign sources <sup>4</sup> | 16.8                            | 14   | 74.0   | 9  | 82.5   | 20   |  |
| Materials purchased or transferred from domestic sources             | 934.3                           | 1  | 293.4  | 3  | 119.2  | 14   |  |
| Adjustment ratio <sup>3</sup>  | 1.1                             | (X)  | 1.6  | (X)  | 1.9  | (X)  |  |

<sup>1</sup>For description of relative standard error of estimate, see Qualifications of the Data in appendixes.

<sup>2</sup>Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to total employment for all establishments classified in industry. (See appendixes for explanation of sample weight.)

<sup>3</sup>Detail has been adjusted upwards to account for nonresponse. Inverse of the ratio shown represents a measure of the response to the inquiry. (See appendixes for further explanation.)

<sup>4</sup>Data may understate the true cost of imported parts, components, and supplies since some respondents do not know the origin of these materials. Includes cases where materials were purchased from secondary suppliers or where they were transferred from company-operated warehouses or other distribution points. Direct purchases from foreign suppliers and importers by domestic manufacturing establishments are believed to be reported accurately.

Table 4. Industry Statistics by Employment Size of Establishment: 1987

(For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes)

| Industry and employment size class             | E1 | All establish-<br>ments<br>(no.) | All employees     |                                 | Production workers |                     |                               | Value<br>added by<br>manufacture<br>(million<br>dollars) | Cost of<br>materials<br>(million<br>dollars) | Value of<br>shipments<br>(million<br>dollars) | New<br>capital<br>expendi-<br>tures<br>(million<br>dollars) | End-of-<br>year<br>inven-<br>tories<br>(million<br>dollars) |
|--|----|----------------------------------|-------------------|---------------------------------|--------------------|---------------------|-------------------------------|--|--|---|---|---|
|  |    |                                  | Number<br>(1,000) | Payroll<br>(million<br>dollars) | Number<br>(1,000)  | Hours<br>(millions) | Wages<br>(million<br>dollars) |  |  |   |   |   |
| <b>INDUSTRY 3291, ABRASIVE PRODUCTS</b>        |    |                                  |                   |                                 |                    |                     |                               |  |  |   |   |   |
| Total  | -  | 405                              | 23.4              | 624.2                           | 15.5               | 31.2                | 349.9                         | 2 001.2  | 1 656.3                                      | 3 621.4                                       | 113.5   | 596.7   |
| Establishments with an average of—             |    |                                  |                   |                                 |                    |                     |                               |  |  |   |   |   |
| 1 to 4 employees                               | E9 | 83                               | .2                | 3.0                             | .1                 | .2                  | 1.7                           | 10.8   | 8.8  | 19.3  | .3  | 3.2   |
| 5 to 9 employees                               | E8 | 56                               | .4                | 7.2                             | .3                 | .5                  | 4.3                           | 25.5   | 21.2   | 46.7  | .6  | 6.2   |
| 10 to 19 employees                             | E7 | 88                               | 1.3               | 28.7                            | .8                 | 1.7                 | 15.6                          | 90.6   | 86.4   | 177.1   | 2.6   | 26.0  |
| 20 to 49 employees                             | E3 | 95                               | 3.1               | 66.6                            | 2.1                | 4.2                 | 37.1                          | 167.8  | 132.8  | 299.7   | 4.1   | 50.2  |
| 50 to 99 employees                             | -  | 44                               | 3.1               | 69.1                            | 2.2                | 4.6                 | 41.3                          | 177.5  | 155.2  | 330.7   | 7.7   | 55.3  |
| 100 to 249 employees                           | -  | 21                               | 3.1               | 72.9                            | 2.2                | 4.4                 | 42.0                          | 207.2  | 201.8  | 404.3   | 6.7   | 91.0  |
| 250 to 499 employees                           | -  | 10                               | 3.2               | 77.7                            | 2.4                | 4.8                 | 49.7                          | 330.3  | 386.7  | 704.8   | 16.7  | 96.8  |
| 500 to 999 employees                           | -  | 6                                | 9.2               | 299.1                           | 5.3                | 10.8                | 158.3                         | 991.6  | 663.6  | 1 638.7                                       | 74.8  | 268.1   |
| 1,000 to 2,499 employees                       | -  | 1                                | (D)               | (D)                             | (D)                | (D)                 | (D)                           | (D)  | (D)  | (D)   | (D)   | (D)   |
| 2,500 employees or more                        | -  | 1                                | (D)               | (D)                             | (D)                | (D)                 | (D)                           | (D)  | (D)  | (D)   | (D)   | (D)   |
| Covered by administrative records <sup>2</sup> | E9 | 197                              | 1.8               | 33.0                            | 1.2                | 2.4                 | 18.4                          | 121.2  | 105.3  | 226.5   | 3.2   | 32.6  |

See footnotes at end of table.

Table 4. Industry Statistics by Employment Size of Establishment: 1987—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

| Industry and employment size class                         | E <sup>1</sup> | All establish-<br>ments<br>(no.) | All employees     |                                 | Production workers |                     |                               | Value added by manufac-<br>ture<br>(million<br>dollars) | Cost of materials<br>(million<br>dollars) | Value of shipments<br>(million<br>dollars) | New capital expenditures<br>(million<br>dollars) | End-of-<br>year inventories<br>(million<br>dollars) |
|--|----------------|----------------------------------|-------------------|---------------------------------|--------------------|---------------------|-------------------------------|---|---|--|--|---|
|  |                |                                  | Number<br>(1,000) | Payroll<br>(million<br>dollars) | Number<br>(1,000)  | Hours<br>(millions) | Wages<br>(million<br>dollars) |   |   |  |  |   |
| <b>INDUSTRY 3292, ASBESTOS PRODUCTS</b>                    |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| Total  | —              | 54                               | 4.0               | 98.7                            | 3.1                | 8.3                 | 70.3                          | 202.8   | 185.2                                     | 388.5                                      | 14.9   | 49.6  |
| Establishments with an average of—                         |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| 1 to 4 employees   | E6             | 7                                | (Z)               | .2                              | (Z)                | (Z)                 | .2                            | .5  | .7  | 1.3  | (Z)  | .3  |
| 5 to 9 employees   | E7             | 12                               | .1                | 1.7                             | .1                 | .1                  | 1.3                           | 4.3   | 4.2                                       | 8.5  | .3   | 1.4   |
| 10 to 19 employees   | E8             | 13                               | .2                | 3.9                             | .1                 | .3                  | 2.9                           | 9.6   | 7.2                                       | 16.8                                       | .7   | 3.4   |
| 20 to 49 employees   | E5             | 9                                | .3                | 6.3                             | .2                 | .3                  | 4.5                           | 13.2  | 10.4                                      | 25.3                                       | .6   | 4.0   |
| 50 to 99 employees   | —              | 5                                | .3                | 6.4                             | .3                 | .5                  | 4.6                           | 18.4  | 13.9                                      | 32.3                                       | .9   | 5.9   |
| 100 to 249 employees                                       | —              | 4                                | .6                | 11.7                            | .5                 | .9                  | 9.7                           | 42.1  | 32.0                                      | 75.0                                       | 1.3  | 9.5   |
| 500 to 999 employees                                       | —              | 4                                | 2.5               | 68.4                            | 1.9                | 4.1                 | 47.1                          | 114.6   | 116.8                                     | 227.3                                      | 11.0   | 25.1  |
| Covered by administrative records <sup>2</sup>             | E9             | 29                               | .3                | 6.4                             | .2                 | .4                  | 4.7                           | 15.1  | 11.4                                      | 26.5                                       | 1.1  | 5.4   |
| <b>INDUSTRY 3295, MINERALS, GROUND OR TREATED</b>          |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| Total  | —              | 381                              | 8.8               | 218.4                           | 6.4                | 12.9                | 149.8                         | 834.4   | 563.9                                     | 1 406.2                                    | 53.2   | 190.7   |
| Establishments with an average of—                         |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| 1 to 4 employees   | E6             | 70                               | .2                | 3.2                             | .1                 | .2                  | 2.1                           | 14.0  | 9.4                                       | 22.5                                       | .6   | 5.0   |
| 5 to 9 employees   | E3             | 94                               | .7                | 14.0                            | .5                 | .9                  | 9.7                           | 50.6  | 43.3                                      | 95.3                                       | 2.5  | 12.2  |
| 10 to 19 employees   | E1             | 109                              | 1.5               | 34.9                            | 1.1                | 2.2                 | 23.7                          | 129.9   | 124.1                                     | 253.7                                      | 4.7  | 38.6  |
| 20 to 49 employees   | E1             | 69                               | 2.0               | 48.7                            | 1.5                | 2.9                 | 32.6                          | 180.8   | 137.9                                     | 320.1                                      | 10.9   | 40.3  |
| 50 to 99 employees   | —              | 25                               | 1.7               | 44.0                            | 1.3                | 2.7                 | 29.6                          | 164.9   | 103.1                                     | 264.7                                      | 10.2   | 40.8  |
| 100 to 249 employees                                       | —              | 12                               | 2.7               | 73.6                            | 1.8                | 3.9                 | 52.0                          | 294.2   | 146.0                                     | 449.9                                      | 24.3   | 53.6  |
| 250 to 499 employees                                       | —              | 1                                | (D)               | (D)                             | (D)                | (D)                 | (D)                           | (D)   | (D)                                       | (D)  | (D)  | (D)   |
| 500 to 999 employees                                       | —              | 1                                | (D)               | (D)                             | (D)                | (D)                 | (D)                           | (D)   | (D)                                       | (D)  | (D)  | (D)   |
| Covered by administrative records <sup>2</sup>             | E9             | 53                               | .2                | 2.4                             | .1                 | .2                  | 1.6                           | 10.2  | 7.9                                       | 18.1                                       | .4   | 2.8   |
| <b>INDUSTRY 3296, MINERAL WOOL</b>                         |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| Total  | —              | 231                              | 21.5              | 619.4                           | 17.4               | 36.6                | 483.6                         | 1 985.6   | 1 268.8                                   | 3 260.3                                    | 177.6  | 242.5   |
| Establishments with an average of—                         |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| 1 to 4 employees   | E6             | 55                               | .1                | 1.7                             | .1                 | .2                  | 1.4                           | 5.9   | 4.3                                       | 10.1                                       | .3   | .8  |
| 5 to 9 employees   | E7             | 30                               | .2                | 3.4                             | .2                 | .3                  | 2.4                           | 10.7  | 8.6                                       | 19.4                                       | .8   | 1.2   |
| 10 to 19 employees   | E4             | 37                               | .5                | 10.2                            | .4                 | .7                  | 6.4                           | 34.2  | 33.6                                      | 68.7                                       | 2.0  | 5.4   |
| 20 to 49 employees   | E3             | 40                               | 1.3               | 25.6                            | 1.0                | 2.0                 | 18.1                          | 73.9  | 76.3                                      | 150.2                                      | 3.9  | 13.4  |
| 50 to 99 employees   | E1             | 19                               | 1.4               | 31.3                            | 1.1                | 2.2                 | 20.5                          | 71.6  | 79.3                                      | 149.4                                      | 4.3  | 11.8  |
| 100 to 249 employees                                       | —              | 19                               | 2.9               | 72.0                            | 2.3                | 5.0                 | 54.4                          | 197.6   | 180.0                                     | 377.3                                      | 9.9  | 35.5  |
| 250 to 499 employees                                       | —              | 21                               | 7.8               | 233.5                           | 6.2                | 13.1                | 181.7                         | 818.9   | 465.8                                     | 1 288.3                                    | 45.1   | 86.5  |
| 500 to 999 employees                                       | —              | 9                                | 7.3               | 241.7                           | 6.2                | 13.1                | 198.7                         | 722.8   | 421.0                                     | 1 196.9                                    | 111.2  | 88.0  |
| 1,000 to 2,499 employees                                   | —              | 1                                | (D)               | (D)                             | (D)                | (D)                 | (D)                           | (D)   | (D)                                       | (D)  | (D)  | (D)   |
| Covered by administrative records <sup>2</sup>             | E9             | 88                               | .5                | 7.3                             | .4                 | .7                  | 5.6                           | 23.9  | 14.3                                      | 38.1                                       | 1.6  | 2.4   |
| <b>INDUSTRY 3297, NONCLAY REFRACTORIES</b>                 |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| Total  | E1             | 135                              | 7.7               | 201.6                           | 5.6                | 11.2                | 130.3                         | 510.9   | 443.5                                     | 954.5                                      | 16.3   | 189.8   |
| Establishments with an average of—                         |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| 1 to 4 employees   | E5             | 25                               | .1                | 1.2                             | (Z)                | .1                  | .8                            | 2.8   | 6.3                                       | 9.0  | .2   | 1.9   |
| 5 to 9 employees   | E5             | 13                               | .1                | 2.2                             | .1                 | .1                  | 1.4                           | 5.8   | 6.3                                       | 12.2                                       | .1   | 3.6   |
| 10 to 19 employees   | E4             | 18                               | .2                | 4.7                             | .2                 | .4                  | 3.3                           | 13.7  | 15.4                                      | 29.1                                       | .6   | 4.5   |
| 20 to 49 employees   | E3             | 34                               | 1.2               | 24.8                            | .8                 | 1.7                 | 15.9                          | 59.3  | 56.7                                      | 114.4                                      | 2.4  | 19.9  |
| 50 to 99 employees   | —              | 19                               | 1.3               | 30.1                            | 1.0                | 2.0                 | 21.2                          | 89.4  | 92.8                                      | 184.1                                      | 2.6  | 39.3  |
| 100 to 249 employees                                       | —              | 23                               | 3.8               | 107.0                           | 2.6                | 5.4                 | 64.2                          | 271.1   | 216.1                                     | 488.8                                      | 9.4  | 88.6  |
| 250 to 499 employees                                       | —              | 3                                | 1.1               | 31.6                            | .9                 | 1.5                 | 23.5                          | 68.8  | 50.0                                      | 116.9                                      | 1.0  | 32.1  |
| Covered by administrative records <sup>2</sup>             | E9             | 47                               | .4                | 7.5                             | .3                 | .6                  | 5.0                           | 18.2  | 17.2                                      | 35.4                                       | .6   | 6.8   |
| <b>INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.</b> |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| Total  | E2             | 543                              | 7.6               | 134.6                           | 5.7                | 10.8                | 84.9                          | 351.8   | 248.4                                     | 597.1                                      | 13.0   | 86.4  |
| Establishments with an average of—                         |                |                                  |                   |                                 |                    |                     |                               |   |   |  |  |   |
| 1 to 4 employees   | E8             | 246                              | .5                | 7.2                             | .3                 | .6                  | 4.4                           | 20.5  | 9.2                                       | 29.7                                       | .7   | 4.6   |
| 5 to 9 employees   | E7             | 112                              | .8                | 11.4                            | .6                 | 1.1                 | 7.4                           | 31.9  | 16.4                                      | 48.4                                       | 1.1  | 7.0   |
| 10 to 19 employees   | E5             | 96                               | 1.3               | 20.0                            | .9                 | 1.8                 | 12.9                          | 54.3  | 30.9                                      | 85.2                                       | 1.8  | 12.1  |
| 20 to 49 employees   | E2             | 55                               | 1.6               | 30.9                            | 1.1                | 2.1                 | 17.1                          | 78.4  | 66.7                                      | 144.9                                      | 3.7  | 19.3  |
| 50 to 99 employees   | E1             | 21                               | 1.3               | 24.5                            | 1.0                | 2.0                 | 15.4                          | 64.0  | 42.0                                      | 104.7                                      | 2.1  | 14.8  |
| 100 to 249 employees                                       | —              | 12                               | 2.1               | 40.7                            | 1.7                | 3.1                 | 27.8                          | 102.6   | 83.1                                      | 184.2                                      | 3.7  | 28.5  |
| 250 to 499 employees                                       | —              | 1                                | (D)               | (D)                             | (D)                | (D)                 | (D)                           | (D)   | (D)                                       | (D)  | (D)  | (D)   |
| Covered by administrative records <sup>2</sup>             | E9             | 348                              | 1.7               | 20.4                            | 1.2                | 2.3                 | 13.2                          | 59.5  | 27.7                                      | 87.2                                       | 1.7  | 13.4  |

Note: For qualifications of data, see footnotes on table 1a. Data shown as a (D) are included in underscored figures above.

<sup>1</sup>Payroll and sales data for some small single unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other Government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown for those employment-size classes where estimated data based on administrative-record data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

<sup>2</sup>Report forms were not mailed to small single unit companies with up to 20 employees (cutoff varied by industry). Payroll and sales data for 1987 were obtained from administrative records supplied by other agencies of the Federal Government. Those data were then used in conjunction with industry averages to estimate the items shown. Data are also included in respective employment-size classes shown.

Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1987

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry or product class code | Industry or primary product class  | All establishments (number) | All employees  |                           | Production workers |                  |                         | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) |
|--------------------------------|--|-----------------------------|----------------|---------------------------|--------------------|------------------|-------------------------|--|-------------------------------------|--------------------------------------|--|
|                                |  |                             | Number (1,000) | Payroll (million dollars) | Number (1,000)     | Hours (millions) | Wages (million dollars) |  |                                     |                                      |  |
| 3291                           | <b>Abrasive products:</b><br>All establishments in industry -----  | 405                         | 23.4           | 624.2                     | 15.5               | 31.2             | 349.9                   | 2 001.2                                      | 1 656.3                             | 3 621.4                              | 113.5                                      |
| 32915                          | Establishments with this product class primary:<br>Nonmetallic sized grains, powders, and flour abrasives -----      | 24                          | 2.4            | 78.6                      | 1.5                | 3.2              | 41.6                    | 179.6  | 203.1                               | 372.8                                | 10.1                                       |
| 32916                          | Nonmetallic abrasive products-----   | 85                          | 8.9            | 242.1                     | 5.6                | 11.1             | 124.4                   | 530.5  | 264.2                               | 794.6                                | 42.7                                       |
| 32917                          | Nonmetallic coated abrasive products and buffering wheels, polishing wheels, and laps -----                          | 43                          | (D)            | (D)                       | (D)                | (D)              | (D)                     | (D)  | (D)                                 | (D)                                  | (D)  |
| 32918                          | Metal abrasives (including scouring pads) -----  | 18                          | (D)            | (D)                       | (D)                | (D)              | (D)                     | (D)  | (D)                                 | (D)                                  | (D)  |
| 3292                           | <b>Asbestos products:</b><br>All establishments in industry -----  | 54                          | 4.0            | 98.7                      | 3.1                | 6.3              | 70.3                    | 202.6  | 185.2                               | 386.5                                | 14.9                                       |
| 32922                          | Establishments with this product class primary:<br>Asbestos friction materials -----                                 | 9                           | 3.1            | 78.8                      | 2.4                | 5.0              | 55.7                    | 148.3  | 144.5                               | 289.2                                | 11.9                                       |
| 32927                          | Other asbestos products-----   | 8                           | .4             | 9.7                       | .3                 | .6               | 7.1                     | 30.6   | 24.1                                | 57.1                                 | 1.4  |
| 3295                           | <b>Minerals, ground or treated:</b><br>All establishments in industry -----  | 381                         | 8.8            | 218.4                     | 6.4                | 12.9             | 149.8                   | 834.4  | 563.9                               | 1 406.2                              | 53.2                                       |
| 3296                           | <b>Mineral wool:</b><br>All establishments in industry -----   | 231                         | 21.5           | 619.4                     | 17.4               | 36.6             | 483.6                   | 1 985.6                                      | 1 268.8                             | 3 260.3                              | 177.6                                      |
| 32961                          | Establishments with this product class primary:<br>Mineral wool for thermal and acoustical envelope insulation ----- | 67                          | 14.9           | 458.7                     | 12.2               | 25.9             | 361.4                   | 1 584.0                                      | 957.7                               | 2 549.7                              | 150.2                                      |
| 32962                          | Mineral wool for industrial, equipment, and appliance insulation -----   | 36                          | 4.8            | 125.9                     | 3.9                | 8.1              | 99.0                    | 294.1  | 245.0                               | 537.1                                | 20.5                                       |
| 3297                           | <b>Nonclay refractories:</b><br>All establishments in industry -----   | 135                         | 7.7            | 201.6                     | 5.6                | 11.2             | 130.3                   | 510.9  | 443.5                               | 954.5                                | 16.3                                       |
| 3299                           | <b>Nonmetallic mineral products, n.e.c.:</b><br>All establishments in industry -----                                 | 543                         | 7.6            | 134.6                     | 5.7                | 10.8             | 84.9                    | 351.8  | 248.4                               | 597.1                                | 13.0                                       |

Note: For qualifications of data, see footnotes on table 1a.

Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments and Specialization and Coverage Ratios for the Industry: 1987 and Earlier Census Years

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and product group code | Industry and census year                   | Value of shipments      |                                    |                                      |  |  | Value of primary product shipments             |   |  |  |    |
|---------------------------------|--|-------------------------|------------------------------------|--------------------------------------|--|--|--|---|--|--|----|
|                                 |  | Total (million dollars) | Primary products (million dollars) | Secondary products (million dollars) | Miscellaneous receipts (million dollars) | Primary product specialization ratio col. B ÷ col. B+C (percent) | Total made in all industries (million dollars) | Made in this industry (million dollars) | Made in other industries (million dollars) | Coverage ratio col. B ÷ col. F (percent) |    |
|                                 |  |                         |                                    |                                      |  |  |  |   |  |  |    |
|                                 |  | A                       | B                                  | C                                    | D  | E  | F  | G                                       | H  | I  |    |
| 3291                            | Abrasive products -----                    | 1987--                  | 3 621.4                            | 2 691.4                              | 582.3                                    | 347.7  | 82   | 2 871.6                                 | 2 691.4                                    | 180.2                                    | 94 |
|                                 |  | 1982--                  | 2 750.7                            | 2 034.9                              | 420.4                                    | 295.4  | 83   | 2 135.7                                 | 2 034.9                                    | 100.9                                    | 95 |
|                                 |  | 1977--                  | 1 955.8                            | 1 667.9                              | 187.4                                    | 100.5  | 90   | 1 721.8                                 | 1 667.9                                    | 53.9                                     | 97 |
| 3292                            | Asbestos products-----                     | 1987--                  | 386.5                              | 346.9                                | 21.1                                     | 18.5   | 94   | 389.7                                   | 346.9                                      | 42.8                                     | 89 |
|                                 |  | 1982--                  | 842.8                              | 762.0                                | 65.2                                     | 15.6   | 92   | 841.0                                   | 762.0                                      | 79.0                                     | 91 |
|                                 |  | 1977--                  | 882.1                              | 781.4                                | 66.7                                     | 34.0   | 92   | 960.1                                   | 781.4                                      | 178.7                                    | 81 |
| 3295                            | Minerals, ground or treated-----           | 1987--                  | 1 406.2                            | 1 283.8                              | 60.0                                     | 62.4   | 96   | 1 344.8                                 | 1 283.8                                    | 61.0                                     | 95 |
|                                 |  | 1982--                  | 1 256.5                            | 1 166.1                              | 25.4                                     | 65.1   | 98   | 1 252.9                                 | 1 166.1                                    | 86.8                                     | 93 |
|                                 |  | 1977--                  | 957.3                              | 818.6                                | 33.1                                     | 105.5  | 96   | 911.0                                   | 818.6                                      | 92.4                                     | 90 |
| 3296                            | Mineral wool -----                         | 1987--                  | 3 260.3                            | 3 070.9                              | 126.1                                    | 63.3   | 96   | 3 145.9                                 | 3 070.9                                    | 74.9                                     | 98 |
|                                 |  | 1982--                  | 2 281.1                            | 2 144.2                              | 67.9                                     | 69.0   | 97   | 2 215.2                                 | 2 144.2                                    | 71.0                                     | 97 |
|                                 |  | 1977--                  | 1 790.5                            | 1 608.1                              | 128.2                                    | 54.3   | 93   | 1 684.0                                 | 1 608.1                                    | 75.9                                     | 96 |
| 3297                            | Nonclay refractories -----                 | 1987--                  | 954.5                              | 829.5                                | 87.7                                     | 37.3   | 90   | 972.4                                   | 829.5                                      | 142.9                                    | 85 |
|                                 |  | 1982--                  | 691.0                              | 588.7                                | 94.9                                     | 7.4  | 86   | 715.8                                   | 588.7                                      | 127.1                                    | 82 |
|                                 |  | 1977--                  | 680.2                              | 607.1                                | 52.5                                     | 20.6   | 92   | 734.0                                   | 607.1                                      | 126.9                                    | 83 |
| 3299                            | Nonmetallic mineral products, n.e.c. ----- | 1987--                  | 597.1                              | 520.1                                | 56.2                                     | 20.8   | 90   | 597.6                                   | 520.1                                      | 77.5                                     | 87 |
|                                 |  | 1982--                  | 422.3                              | 393.6                                | 20.8                                     | 7.9  | 95   | 453.8                                   | 393.6                                      | 60.2                                     | 87 |
|                                 |  | 1977--                  | 387.3                              | 347.1                                | 27.2                                     | 13.0   | 93   | 391.1                                   | 347.1                                      | 44.0                                     | 89 |

Table 6a-1. **Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

See footnotes at end of table.

Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

| 1987<br>product<br>code | Product  | 1987  |                                |                               | 1982  |                                |                               |
|-------------------------|--|---|--------------------------------|-------------------------------|---|--------------------------------|-------------------------------|
|                         |  | Number of<br>companies<br>with<br>shipments<br>of<br>\$100,000<br>or more | Product shipments <sup>1</sup> |                               | Number of<br>companies<br>with<br>shipments<br>of<br>\$100,000<br>or more | Product shipments <sup>1</sup> |                               |
|                         |  |   | Quantity <sup>2</sup>          | Value<br>(million<br>dollars) |   | Quantity <sup>2</sup>          | Value<br>(million<br>dollars) |
| 3292- --                | <b>ASBESTOS PRODUCTS—Con.</b>  |   |                                |                               |   |                                |                               |
| 32927 --                | Other asbestos products  | (NA)  | (X)                            | 74.2                          | (NA)  | (X)                            | 544.2                         |
| 32927 14                | Vinyl asbestos floor tile  | -   | -                              | -                             | (NA)  | (D)                            | (D)                           |
| 32927 15                | Asbestos textiles:   |   |                                |                               |   |                                |                               |
| 32927 31                | Yarn, cord, thread, and cloth  | 4   | (S)                            | 4.7                           | (NA)  | (S)                            | 22.5                          |
|                         | Other asbestos textiles (including roving, lap, wick, rope, tape, carded fibers, etc.)   | do  | (D)                            | (D)                           | 6   | (S)                            | 16.6                          |
| 32927 33                | Asbestos felts:  |   |                                |                               |   |                                |                               |
|                         | Roofing, asphalt or tar saturated  | 1,000 s<br>tons   | 2                              | (D)                           | (D)   | 5                              | *34.5                         |
| 32927 34                | Other  | do  | 1                              | (D)                           | (D)   | 5                              | **13.9                        |
| 32927 36                | Insulation materials containing asbestos (including pipe and block insulation)   |   | 1                              | (X)                           | (D)   | 5                              | (X)                           |
|                         | Asbestos-cement products:  |   |                                |                               |   |                                |                               |
| 32927 41                | Flat sheets and wallboard, all thicknesses converted to 1/4 in. basis  | 1,000 sq ft   | -                              | -                             | 5   | *247.9                         | 22.6                          |
| 32927 77                | Shingles and clapboard (including accessories)   | mil squares   | 1                              | (D)                           | (D)   | 3                              | (S)                           |
| 32927 78                | Other, including corrugated sheets, pipe, conduits, ducts, etc.  |   | 3                              | (X)                           | 38.3  | (NA)                           | (NA)                          |
| 32927 98                | Other asbestos products (including asphalt floor tile, millboard, prefabricated housing components, etc.)                                      |   | -                              | (D)                           | (NA)  | (D)                            | (D)                           |
| 32927 00                | Other asbestos products, n.s.k.  |   | (NA)                           | (X)                           | .1  | (NA)                           | (X)                           |
| 32920 --                | Asbestos products, n.s.k.  |   | (NA)                           | (X)                           | 40.5  | (NA)                           | (X)                           |
| 32920 00                | Asbestos products, n.s.k., typically for establishments with 20 employees or more (see note)   |   | (NA)                           | (X)                           | 14.2  | (NA)                           | (X)                           |
| 32920 02                | Asbestos products, n.s.k., typically for establishments with less than 20 employees (see note)   |   | (NA)                           | (X)                           | 26.3  | (NA)                           | (X)                           |
| 3295- --                | <b>MINERALS AND EARTHS, GROUND OR OTHERWISE TREATED</b>  |   |                                |                               |   |                                |                               |
|                         | <b>Total</b>   | (NA)  | (X)                            | 1 344.8                       | (NA)  | (X)                            | 1 252.9                       |
| 32950 --                | Minerals and earths, ground or otherwise treated:  |   |                                |                               |   |                                |                               |
| 32950 11                | Lightweight aggregate (such as diatomaceous earth, expanded clay, expanded slag, cinders, perlite, haydite, pumice, but excluding vermiculite) | 1,000 s<br>tons   | 51                             | (S)                           | 121.0   | 59                             | **2 397.9                     |
|                         | Exfoliated vermiculite:  |   |                                |                               |   |                                |                               |
| 32950 13                | Aggregate  | mil cu ft   | 13                             | (D)                           | (D)   | 15                             | *62.0                         |
| 32950 15                | Other (such as loose fill insulation, acoustical, etc.)  | do  | 5                              | **22.2                        | 20.0  | 6                              | *18.2                         |
| 32950 20                | Refractory magnesia, including dead-burned magnesia or magnesite (for additional detail, see Current Industrial Report MQ-32C, Refractories)   |   | 9                              | (X)                           | 98.6  | 10                             | (X)                           |
| 32950 31                | Crushed slag   | 1,000 s<br>tons   | 20                             | (S)                           | 106.0   | 21                             | **16 142.0                    |
| 32950 61                | Crushed and ground uncalcined gypsum, including gypsite and anhydrite  | do  | 7                              | 296.5                         | 7.4   | 12                             | *1 181.4                      |
| 32950 81                | Natural graphite, ground, refined, or blended  | do  | 4                              | (S)                           | 35.3  | 8                              | 230.8                         |
| 32950 84                | Ground crude fire clay, high alumina clay, and silica fire clay  | do  | 12                             | (S)                           | 39.0  | 14                             | (S)                           |
| 32950 85                | Clays artificially activated with acid or other materials  | do  | 10                             | *646.4                        | 136.5   | 9                              | (S)                           |
| 32950 86                | Mica, ground or treated  | do  | 7                              | (S)                           | 5.6   | 6                              | **38.5                        |
| 42950 93                | Talc, steatite, soapstone, and pyrophyllite, ground or otherwise treated   | do  | 3                              | (D)                           | (D)   | 4                              | (S)                           |
| 32950 98                | Other minerals and earths, ground or otherwise treated, including feldspar, roofing granules, and ground barite                                | do  | 62                             | (S)                           | 495.6   | 71                             | (X)                           |
| 32950 00                | Minerals, ground or treated, n.s.k., typically for establishments with 20 employees or more (see note)   |   | (NA)                           | (X)                           | 140.3   | (NA)                           | (X)                           |
| 32950 02                | Minerals, ground or treated, n.s.k., typically for establishments with less than 20 employees (see note)                                       |   | (NA)                           | (X)                           | 19.1  | (NA)                           | (X)                           |
| 3296- --                | <b>MINERAL WOOL</b>  |   |                                |                               |   |                                |                               |
|                         | <b>Total</b>   | (NA)  | (X)                            | 3 145.9                       | (NA)  | (X)                            | 2 215.2                       |
| 32961 --                | Mineral wool for thermal and acoustical envelope insulation (for insulating homes, and commercial and industrial buildings)                    |   | (NA)                           | (X)                           | 2 180.0   | (NA)                           | (X)                           |
| 32961 11                | Loose fiber (blowing and pouring) (shipped as such) and granulated fiber   | 1,000 s<br>tons   | 8                              | **235.2                       | 95.5  | (NA)                           | (4)                           |
|                         | Building batts, blankets, and rolls (in thermal resistance (R) values):  |   |                                |                               |   |                                |                               |
| 32961 31                | R-19.0 or more   | 1,000 s<br>tons   | 12                             | (S)                           | 641.4   | (NA)                           | 588.1                         |
| 32961 35                | R-11.0 to R-18.9   | do  | 12                             | (S)                           | 421.4   | (NA)                           | 468.5                         |
| 32961 38                | R-10.9 or less   | do  | 7                              | **54.2                        | 56.4  | (NA)                           | (S)                           |
| 32961 51                | Board (such as roof insulation)  | do  | 6                              | (S)                           | 117.1   | (NA)                           | (4)                           |
| 32961 61                | Acoustical, such as wall and ceiling (sold as acoustical insulation)   | do  | 13                             | (S)                           | 600.9   | (NA)                           | (S)                           |
| 32961 98                | Other mineral wool for thermal insulation  | do  | 10                             | (S)                           | 133.5   | (NA)                           | (S)                           |
| 32961 00                | Mineral wool for thermal and acoustical envelope insulation (for insulating homes, and commercial and industrial buildings), n.s.k.            |   | (NA)                           | (X)                           | 114.0   | (NA)                           | (X)                           |

See footnotes at end of table.

Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For comparability of product classes and product codes between 1982 and 1987, see appendixes. For meaning of abbreviations and symbols, see introductory text]

| 1987<br>product<br>code | Product   | 1987  |                                |                               | 1982  |                                |                               |
|-------------------------|---|---|--------------------------------|-------------------------------|---|--------------------------------|-------------------------------|
|                         |   | Number of<br>companies<br>with<br>shipments<br>of<br>\$100,000<br>or more | Product shipments <sup>1</sup> |                               | Number of<br>companies<br>with<br>shipments<br>of<br>\$100,000<br>or more | Product shipments <sup>1</sup> |                               |
|                         |   |   | Quantity <sup>2</sup>          | Value<br>(million<br>dollars) |   | Quantity <sup>2</sup>          | Value<br>(million<br>dollars) |
| 3296- --                | <b>MINERAL WOOL—Con.</b>  |   |                                |                               |   |                                |                               |
| 32962 --                | Mineral wool for industrial, equipment, and appliance insulation  | (NA)  | (X)                            | 786.8                         | (NA)  | (X)                            | 625.7                         |
|                         | Blankets (flexible) (including fabricated pieces, rolls, and batts):  |   |                                |                               |   |                                |                               |
| 32962 31                | Plain   | 1,000 s<br>tons--   | 12                             | (S)                           | 96.0  | (NA)                           | (S)                           |
| 32962 34                | Coated  | do--  | 5                              | (S)                           | 38.6  | (NA)                           | (S)                           |
| 32962 36                | Faced and metal meshed  | do--  | 7                              | (S)                           | 8.2   | (NA)                           | (S)                           |
| 32962 45                | Special purpose insulation pieces, such as special purpose automotive, appliance, and aerospace items and original equipment parts  | do--  | 16                             | (S)                           | 282.8   | (NA)                           | (S)                           |
| 32962 51                | Other blocks and boards   | do--  | 5                              | (D)                           | (D)   | (NA)                           | (S)                           |
| 32962 61                | Pipe insulation   | do--  | 7                              | 32.3                          | 117.4   | (NA)                           | (S)                           |
| 32962 83                | Acoustical (including pads, boards, patches, etc.)  | do--  | 5                              | (D)                           | (D)   | (NA)                           | (S)                           |
| 32962 98                | Other mineral wool for insulation (including air duct, loose fiber) (shipped as such), granulated fiber, insulating, and finishing cements, high-temperature insulation fibers, etc.                          | do--  | 10                             | (S)                           | 152.7   | (NA)                           | (S)                           |
| 32962 00                | Mineral wool for industrial, equipment, and appliance insulation, n.s.k.  | (NA)  | (X)                            | 40.1                          | (NA)  | (X)                            | .4                            |
| 32960 --                | Mineral wool, n.s.k.  | (NA)  | (X)                            | 179.0                         | (NA)  | (X)                            | 33.4                          |
| 32960 00                | Mineral wool, n.s.k., typically for establishments with 20 employees or more (see note)   | (NA)  | (X)                            | 141.4                         | (NA)  | (X)                            | 11.2                          |
| 32960 02                | Mineral wool, n.s.k., typically for establishments with less than 20 employees (see note)   | (NA)  | (X)                            | 37.6                          | (NA)  | (X)                            | 22.2                          |
| 3297- --                | <b>NONCLAY REFRactories</b>   |   |                                |                               |   |                                |                               |
|                         | Total   | (NA)  | (X)                            | 972.4                         | (NA)  | (X)                            | 715.8                         |
| 32970 --                | Nonclay refractories, except dead-burned magnesia:  |   |                                |                               |   |                                |                               |
| 32970 00                | Nonclay refractories, except dead-burned magnesia (for additional detail, see Current Industrial Report MQ-32C, Refractories)   | 64  | (X)                            | 940.0                         | (NA)  | (X)                            | 700.5                         |
| 32970 02                | Nonclay refractories, n.s.k., typically for establishments with less than 20 employees (see note)   | (NA)  | (X)                            | 32.4                          | (NA)  | (X)                            | 15.2                          |
| 3299- --                | <b>NONMETALLIC MINERAL PRODUCTS, N.E.C.</b>   |   |                                |                               |   |                                |                               |
|                         | Total   | (NA)  | (X)                            | 597.6                         | (NA)  | (X)                            | 453.8                         |
| 32990 --                | Other nonmetallic mineral products, n.e.c.:   |   |                                |                               |   |                                |                               |
|                         | Mica products:  |   |                                |                               |   |                                |                               |
| 32990 53                | Built-up sheet mica products  | 6   | (X)                            | 13.5                          | 7   | (X)                            | 13.7                          |
| 32990 55                | Other sheet mica products   | 7   | (X)                            | 9.4                           | 7   | (X)                            | 4.5                           |
| 32990 56                | Mica products, other than sheet   | 11  | (X)                            | 10.5                          | 8   | (X)                            | 16.6                          |
| 32990 81                | Statuary and art goods (factory production)   | 28  | (X)                            | 76.2                          | 52  | (X)                            | 40.6                          |
| 32990 94                | Other nonmetallic mineral products (including magnesite floor composition, stucco, artificial graphite, synthetic stones, sand-lime brick, block and tile, calcium silicate, and perlite pipe covering, etc.) | 76  | (X)                            | 303.4                         | 62  | (X)                            | 304.7                         |
| 32990 00                | Other nonmetallic mineral products, n.e.c., n.s.k., typically for establishments with 20 employees or more (see note)   | (NA)  | (X)                            | 97.7                          | (NA)  | (X)                            | 41.8                          |
| 32990 02                | Other nonmetallic mineral products, n.e.c., n.s.k., typically for establishments with less than 20 employees (see note)   | (NA)  | (X)                            | 86.9                          | (NA)  | (X)                            | 31.9                          |

Note: In 1987 Census of Manufactures, data for establishments of small single unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoffs used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1987 and 1982 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

<sup>1</sup>Data reported by all producers, not just those with shipments of \$100,000 or more.

<sup>2</sup>For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

<sup>3</sup>For 1982, data for product codes 32922 51 and 32922 55 are combined to avoid disclosing data for individual companies.

<sup>4</sup>For 1982, product codes 32961 11 and 32961 51 were combined with product code 32961 98 to avoid disclosing data for individual companies.

Table 6a-2. Related Products From Current Industrial Reports Series—Value of Shipments by All Producers: 1987 and 1982

[Additional detail is provided in the Current Industrial Report series. For meaning of abbreviations and symbols, see introductory text]

| 1987 product code | Product   | 1987 product shipments |                         | 1982 product shipments |                         |
|-------------------|---|------------------------|-------------------------|------------------------|-------------------------|
|                   |   | Quantity               | Value (million dollars) | Quantity               | Value (million dollars) |
|                   | <b>MQ32C, REFRactories</b>  |                        |                         |                        |                         |
|                   | Nonclay refractories:   |                        |                         |                        |                         |
|                   | Brick and shapes:   |                        |                         |                        |                         |
| 32970 12          | Silica brick and shapes..... mil brk equiv...   | 6.9                    | 19.5                    | (D)                    | (D)                     |
| 32970 13          | Magnesite and magnesite-chrome brick and shapes, and chrome brick (excluding molten cast):  |                        |                         |                        |                         |
| 32970 14          | Magnesite-carbon brick and shapes, less than 7 percent carbon (predominantly pitch or resin bonded)..... mil brk equiv...   | 7.1                    | 24.1                    | 15.7                   | 32.3                    |
| 32970 17          | Magnesite-carbon brick and shapes, 7 percent carbon or more (predominantly pitch and resin bonded)..... do...   | 10.8                   | 67.1                    | 6.8                    | 28.1                    |
| 32970 15          | Carbon impregnated magnesite brick and shapes..... do...  | 3.8                    | 15.4                    | 5.3                    | 24.4                    |
| 32970 19          | Magnesite brick and shapes, burned and unburned..... do...  | 4.5                    | 16.3                    | (D)                    | (D)                     |
| 32970 20          | Magnesite-chrome brick and shapes, high-fired (3050 degrees F or above)..... do...  | 18.4                   | 63.4                    | 19.9                   | 79.5                    |
| 32970 39          | Magnesite-chrome brick and shapes, except high-fired, including burned and unburned brick as well as chrome brick..... do...  | 4.6                    | 21.5                    | 8.5                    | 28.0                    |
| 32970 48          | Carbon and graphite crucibles, retorts, stopper heads, brick, block, and other shaped refractories, including natural graphite refractories..... do...  | 1.8                    | 38.6                    | (D)                    | (D)                     |
| 32970 49          | Silicon carbide kiln furniture (made predominantly of silicon carbide)..... do...   | .7                     | 12.1                    | .8                     | 9.5                     |
| 32970 52          | Silicon carbide bricks and shapes (made predominantly of silicon carbide), except kiln furniture..... do...   | 1.1                    | 33.8                    | 2.5                    | 31.5                    |
| 32970 53          | Mullite brick and shapes (made predominantly of synthetic or fused mullites)..... do...   | 2.9                    | 19.5                    | 2.2                    | 12.4                    |
| 32970 55          | Extra high alumina brick and shapes and extra high alumina pouring pit refractories, including sleeves, nozzles, runners, tuyeres, and ladle gate parts (made predominantly of fused and synthetic alumina)..... do...                            | 3.1                    | 57.4                    | (D)                    | (D)                     |
| 32970 58          | Zircon and zirconia brick and shapes (made predominantly of either material)..... do...   | 1.8                    | 22.8                    | 1.9                    | 20.8                    |
|                   | All other brick and shapes, including basic pouringpit refractories, molten cast shapes, dolomite, dolomite magnesite, forsterite, magnesite, pyrophilite, pyrophilite-zircon, and all other brick and shapes not classified elsewhere..... do... | 4.3                    | 138.6                   | (D)                    | (D)                     |
|                   | Unshaped nonclay refractories:  |                        |                         |                        |                         |
|                   | Mortars:  |                        |                         |                        |                         |
| 32970 61          | Basic bonding mortars (made predominantly of magnetic or chrome ore)..... 1,000 s tons...   | (D)                    | (D)                     | 4.3                    | 1.9                     |
| 32970 62          | Extra-high alumina mortars (made predominantly of fused or synthetic alumina and mullite)..... do...  | 6.9                    | 6.2                     | 11.0                   | 6.3                     |
| 32970 63          | Other nonclay mortars (forsterite, zircon, and silica)..... do...   | (D)                    | (D)                     | 3.1                    | 1.1                     |
|                   | Plastics refractories and ramming mixes, wet and dry types, and castables of nonhydraulic setting type:   |                        |                         |                        |                         |
| 32970 65          | Basic castables, plastics and ramming mixes (wet and dry types)..... 1,000 s tons...  | 61.3                   | 24.5                    | 62.2                   | 25.1                    |
| 32970 64          | Extra-high alumina plastics and ramming mixes (made predominantly of fused or synthetic aluminas and mullite)..... do...  | 23.8                   | 26.4                    | 10.9                   | 10.8                    |
| 32970 66          | Extra-high alumina phosphate bonded plastics and ramming mixes (made predominantly of fused or synthetic aluminas and mullite)..... do...   | 13.6                   | 14.4                    | 11.5                   | 13.0                    |
| 32970 69          | Other nonclay plastics refractories and ramming mixes (forsterite, zircon, etc.)..... do...   | 47.5                   | 28.7                    | 21.7                   | 15.6                    |
| 32970 68          | Extra-high alumina castables (hydraulic setting) (made predominantly of fused or synthetic alumina and mullite)..... do...  | 17.6                   | 16.9                    | 9.8                    | 9.8                     |
| 32970 93          | Other nonclay refractory castables (hydraulic setting)..... do...   | 6.6                    | 5.6                     | 5.5                    | 4.7                     |
|                   | Gunning mixes:  |                        |                         |                        |                         |
| 32970 71          | Basic nonclay gunning mixes, including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite..... 1,000 s tons...  | (D)                    | (D)                     | 235.2                  | 78.0                    |
| 32970 73          | Other nonclay gunning mixes (forsterite, zircon, etc.)..... do...   | (D)                    | (D)                     | 2.9                    | 1.1                     |
|                   | Ceramic refractory fibers:  |                        |                         |                        |                         |
| 32970 75          | 1500 to 2000 degrees F..... 1,000 s tons...   | (D)                    | (D)                     | (X)                    | (NA)                    |
| 32970 78          | 2001 to 2400 degrees F..... do...   | 17.8                   | 43.0                    | (X)                    | (NA)                    |
| 32970 80          | 2401 to 2700 degrees F..... do...   | (D)                    | (D)                     | (X)                    | (NA)                    |
| 32970 83          | 2701 to 3000 degrees F..... do...   | (D)                    | (D)                     | (X)                    | (NA)                    |
| 32970 85          | 3001 degrees F or above..... do...  | (D)                    | (D)                     | (X)                    | (NA)                    |
|                   | Other nonclay refractory materials in lump or ground form, including ground silica:   |                        |                         |                        |                         |
| 32970 94          | Domestic shipments for direct use by customers as a finished refractory and all exported material..... 1,000 s tons...  | 81.3                   | 24.1                    | 153.6                  | 21.1                    |
| 32970 96          | All other domestic shipments of nonclay refractory materials sold in lump or ground form as a refractory raw material..... do...  | 115.5                  | 20.4                    | 97.8                   | 14.0                    |
| 32970 00          | Nonclay refractories, n.s.k. ....   | (X)                    | 31.3                    | (X)                    | 18.5                    |
|                   | Dead-burned magnesia or magnesite:  |                        |                         |                        |                         |
| 32950 23          | Domestic shipments for direct use as finished refractory products and all exported material..... 1,000 s tons...  | 162.1                  | 39.3                    | (D)                    | (D)                     |
| 32950 25          | All other domestic shipments predominantly for use as a refractory raw material..... do...  | (D)                    | (D)                     | 232.0                  | 66.9                    |

Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1987 and 1982

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1987. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes]

| Product class and geographic area   | 1987 value of product shipments | 1982 value of product shipments | Product class and geographic area  | 1987 value of product shipments | 1982 value of product shipments |
|---|---------------------------------|---------------------------------|--|---------------------------------|---------------------------------|
| <b>32915, NONMETALLIC SIZED GRAINS, POWDERS, AND FLOUR ABRASIVES</b>                              |                                 |                                 | <b>32917, NONMETALLIC COATED ABRASIVE PRODUCTS AND BUFFING WHEELS, POLISHING WHEELS, AND LAPS—Con.</b> |                                 |                                 |
| United States   | 413.2                           | 409.7                           | North Carolina   | 27.5                            | 18.2                            |
| California  | 24.0                            | (NA)                            | Ohio   | 45.2                            | 27.5                            |
| Massachusetts   | 83.1                            | 63.7                            |  |                                 |                                 |
| New York  | 98.7                            | 96.2                            | <b>32918, METAL ABRASIVES (INCLUDING SCOURING PADS)</b>  |                                 |                                 |
| Pennsylvania  | 11.9                            | 23.4                            | United States  | 204.2                           | 173.9                           |
|   |                                 |                                 | Ohio   | 44.7                            | 55.1                            |
| <b>32916, NONMETALLIC ABRASIVE PRODUCTS</b>   |                                 |                                 | <b>32961, MINERAL WOOL FOR THERMAL AND ACOUSTICAL ENVELOPE INSULATION</b>                              |                                 |                                 |
| United States   | 657.2                           | 610.8                           | United States  | 2 180.0                         | 1 556.0                         |
| California  | 12.9                            | 47.4                            | California   | 242.8                           | 197.6                           |
| Connecticut   | 21.2                            | (NA)                            | Georgia  | 319.3                           | (NA)                            |
| Illinois  | 73.8                            | 50.6                            | Indiana  | 148.1                           | 43.4                            |
| Michigan  | 36.1                            | 36.0                            | Kansas   | 230.1                           | (NA)                            |
| New Jersey  | 20.4                            | 21.3                            | New Jersey   | 160.3                           | (NA)                            |
| New York  | 44.6                            | 62.3                            | Pennsylvania   | 221.5                           | (NA)                            |
| Ohio  | 66.6                            | 66.2                            | Texas  | 146.3                           | (NA)                            |
| Pennsylvania  | 22.4                            | 25.8                            |  |                                 |                                 |
| <b>32917, NONMETALLIC COATED ABRASIVE PRODUCTS AND BUFFING WHEELS, POLISHING WHEELS, AND LAPS</b> |                                 |                                 | <b>32962, MINERAL WOOL FOR INDUSTRIAL, EQUIPMENT, AND APPLIANCE INSULATION</b>                         |                                 |                                 |
| United States   | 1 286.2                         | 843.1                           | United States  | 786.8                           | 625.7                           |
| California  | 16.0                            | 4.5                             | California   | 63.0                            | (NA)                            |
| Massachusetts   | 20.5                            | 14.3                            | Georgia  | 25.0                            | (NA)                            |
| Michigan  | 22.7                            | 20.5                            | Indiana  | 84.9                            | (NA)                            |

Table 6c. Historical Statistics for Product Classes—Value Shipped by All Producers: 1987 and Earlier Years

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For comparability of product classes and product codes between 1982 and 1987 and explanation of terms, see appendixes]

| 1987 product code | Product class   | 1987    | 1986 <sup>1</sup> | 1985 <sup>1</sup> | 1984 <sup>1</sup> | 1983 <sup>1</sup> | 1982    | 1977    | 1972  |
|-------------------|---|---------|-------------------|-------------------|-------------------|-------------------|---------|---------|-------|
| 3291-             | <b>Abrasive products</b>  |         |                   |                   |                   |                   |         |         |       |
| 32915             | Nonmetallic sized grains, powders, and flour abrasives                              | 2 871.6 | 2 762.5           | 2 843.3           | 2 907.1           | 2 304.6           | 2 135.7 | 1 721.8 | 892.3 |
| 32916             | Nonmetallic abrasive products   | 413.2   | 456.7             | 495.8             | 540.0             | 364.6             | 409.7   | (NA)    | (NA)  |
| 32917             | Nonmetallic coated abrasive products and buffing wheels, polishing wheels, and laps | 657.2   | 701.9             | 708.3             | 708.4             | 603.8             | 610.8   | 797.9   | 449.6 |
| 32918             | Metal abrasives (including scouring pads)   | 1 286.2 | 1 218.5           | 1 292.2           | 1 306.5           | 1 049.3           | 843.1   | 627.8   | 293.9 |
| 32910             | Abrasive products, n.s.k.   | 204.2   | 200.7             | 202.5             | 209.9             | 185.6             | 173.9   | 176.8   | 107.4 |
|                   |   | 310.8   | 184.6             | 144.4             | 142.3             | 101.3             | 98.3    | 119.2   | 41.4  |
| 3292-             | <b>Asbestos products</b>  |         |                   |                   |                   |                   |         |         |       |
| 32922             | Asbestos friction materials   | 389.7   | 457.6             | 587.2             | 627.1             | 724.2             | 841.0   | 960.1   | 742.6 |
| 32927             | Other asbestos products   | 275.0   | 324.2             | 355.3             | 380.3             | 302.2             | 276.5   | 271.7   | 209.5 |
| 32920             | Asbestos products, n.s.k.   | 74.2    | (D)               | 204.6             | 218.0             | 404.6             | 544.2   | 661.2   | (NA)  |
|                   |   | 40.5    | (D)               | 27.2              | 28.7              | 17.4              | 20.3    | 27.0    | 5.3   |
| 3295-             | <b>Minerals and earths, ground or otherwise treated</b>                             |         |                   |                   |                   |                   |         |         |       |
| 32950             | Minerals and earths, ground or otherwise treated                                    | 1 344.8 | 1 184.6           | 1 114.6           | 1 190.7           | 1 374.5           | 1 252.9 | 911.0   | 391.5 |
|                   | Minerals and earths, ground or otherwise treated                                    | 1 344.8 | 1 184.6           | 1 114.6           | 1 190.7           | 1 374.5           | 1 252.9 | 911.0   | 391.5 |
| 3296-             | <b>Mineral wool</b>   |         |                   |                   |                   |                   |         |         |       |
| 32961             | Mineral wool for thermal and acoustical envelope insulation                         | 3 145.9 | 3 170.0           | 3 035.6           | 2 907.9           | 2 452.7           | 2 215.2 | 1 684.0 | 738.7 |
| 32962             | Mineral wool for industrial, equipment, and appliance insulation                    | 2 180.0 | 2 331.7           | 2 193.2           | 2 087.7           | 1 781.9           | 1 556.0 | 1 098.9 | (NA)  |
| 32960             | Mineral wool, n.s.k.  | 786.8   | 793.6             | 789.2             | 778.5             | 637.5             | 625.7   | 568.9   | (NA)  |
|                   |   | 179.0   | 44.7              | 53.2              | 41.7              | 33.4              | 33.4    | 16.0    | 8.2   |
| 3297-             | <b>Nonclay refractories</b>   |         |                   |                   |                   |                   |         |         |       |
| 32970             | Nonclay refractories, except dead-burned magnesia                                   | 972.4   | 886.6             | 900.7             | 869.2             | 688.0             | 715.8   | 734.0   | 372.1 |
|                   |   | 972.4   | 886.6             | 900.7             | 869.2             | 688.0             | 715.8   | 734.0   | 372.1 |
| 3299-             | <b>Nonmetallic mineral products, n.e.c.</b>   |         |                   |                   |                   |                   |         |         |       |
| 32990             | Other nonmetallic mineral products, n.e.c.  | 597.6   | 663.4             | 622.7             | 591.0             | 398.0             | 453.8   | 391.1   | 169.7 |
|                   |   | 597.6   | 663.4             | 622.7             | 591.0             | 398.0             | 453.8   | 391.1   | 169.7 |

<sup>1</sup>Figures are estimates derived from a representative sample of manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures publications for this period.

Table 7. Materials Consumed by Kind: 1987 and 1982

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendixes. For meaning of abbreviations and symbols, see introductory text]

| 1987<br>material<br>code                              | Material   | 1987                  |  | 1982                  |  |  |
|---|--|-----------------------|--|-----------------------|--|--|
|   |  | Quantity <sup>1</sup> | Delivered cost<br>(million<br>dollars) | Quantity <sup>1</sup> | Delivered cost<br>(million<br>dollars) |  |
| <b>INDUSTRY 3291, ABRASIVE PRODUCTS</b>               |  |                       |  |                       |  |  |
| Materials, parts, containers, and supplies            |  |                       |  |                       |  |  |
| 149941  | Natural abrasive materials   | (X)                   | 1 384.1                                | (X)                   | 1 033.9                                |  |
| 281950  | Aluminum oxide   | (X)                   | 29.8                                   | (X)                   | 37.1                                   |  |
| 281992  | Silicon carbide  | 1,000 s tons<br>do    | **208.7<br>**94.6                      | (S)                   | 108.1<br>83.1                          |  |
| 281962  | Alumina zirconia   | do                    | (S)                                    | (S)                   | 17.0                                   |  |
| 190039  | Diamond  | carats                | (S)                                    | (S)                   | 14.8                                   |  |
| 281998  | Cubic boron nitride  | do                    | (S)                                    | **685.9               | 1.5                                    |  |
| 280009  | Other industrial chemicals   | mill lb               | (X)                                    | (X)                   | 26.4                                   |  |
| 289101  | Glues and adhesives  | mill lb               | (S)                                    | 39.3                  | 72.7                                   |  |
| 220101  | Cotton and manmade fiber fabrics, broadwoven and narrow woven  |                       | (X)                                    | 105.0                 |  |  |
| 260001  | Paper and paperboard products  |                       | (X)                                    | 113.6                 |  |  |
| 970099  | All other materials and components, parts, containers, and supplies  |                       | (X)                                    | 640.8                 |  |  |
| 971000  | Materials, parts, containers, and supplies, n.s.k. <sup>2</sup>  |                       | (X)                                    | 137.9                 | 402.8<br>102.7                         |  |
| <b>INDUSTRY 3292, ASBESTOS PRODUCTS</b>               |  |                       |  |                       |  |  |
| Materials, parts, containers, and supplies            |  |                       |  |                       |  |  |
| 149971  | Asbestos, crude, including fiber   | 1,000 s tons          | (S)                                    | 157.4                 | (X) 381.3                              |  |
| 324101  | Portland cement  | do                    | (S)                                    | 16.6                  | **246.1<br>**152.4                     |  |
| 249941  | Cork products  |                       | (X)                                    | 3.3                   | 10.1<br>(D)                            |  |
| 262190  | Building paper and board   |                       | (X)                                    | —                     | (X)                                    |  |
| 280023  | Pigment, organic and inorganic   | mil lb                | (D)                                    | (D)                   | 11.5                                   |  |
| 282104  | Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes | do                    | (D)                                    | (D)                   | 194.3                                  |  |
| 282202  | Synthetic rubber   | do                    | (D)                                    | (D)                   | 29.4                                   |  |
| 083111  | Natural rubber   | mil s tons            | (D)                                    | (D)                   | 2.1<br>(D)                             |  |
| 306902  | Fabricated rubber products, except tires, tubes, hose, belting, and gaskets  |                       | (X)                                    | (D)                   | —                                      |  |
| 331018  | Tin plate, terne plate, and black plate  | 1,000 s tons          | (X)                                    | (D)                   | (X)                                    |  |
| 335002  | Nonferrous metal mill shapes and forms   | do                    | (X)                                    | (D)                   | (D)                                    |  |
| 349012  | Fabricated wire products, including springs and spring wire  | do                    | (D)                                    | (D)                   | —                                      |  |
| 970099  | All other materials and components, parts, containers, and supplies  |                       | (X)                                    | 114.1                 | 183.8                                  |  |
| 971000  | Materials, parts, containers, and supplies, n.s.k. <sup>2</sup>  |                       | (X)                                    | 13.2                  | 47.4                                   |  |
| <b>INDUSTRY 3295, MINERALS, GROUND OR TREATED</b>     |  |                       |  |                       |  |  |
| (Material data were not collected for this industry.) |  |                       |  |                       |  |  |
| <b>INDUSTRY 3296, MINERAL WOOL</b>                    |  |                       |  |                       |  |  |
| Materials, parts, containers, and supplies            |  |                       |  |                       |  |  |
| 145501  | Clay   | —                     | (X)                                    | 951.1                 | (X) 733.5                              |  |
| 147001  | Bante, borate, potash, fluorspar, and rocksalt   |                       | (X)                                    | 8.4                   | (X) 3.4                                |  |
| 220101  | Cotton and manmade fiber fabrics, broadwoven and narrow woven  |                       | (X)                                    | (D)                   | (X) 33.1                               |  |
| 267420  | Paper shipping sacks   | 1,000 s tons          | (D)                                    | 20.0                  | (X) 5.5                                |  |
| 265001  | Paperboard containers and boxes, including folding corrugated, fiber, and set-up   | do                    | (S)                                    | (D)                   | 10.4                                   |  |
| 260001  | All other paper and paperboard products  |                       | (X)                                    | 17.3                  | (S) 15.8                               |  |
| 281000  | Industrial inorganic chemicals   |                       | (X)                                    | 35.8                  | (X) 49.9                               |  |
| 282104  | Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes | mil lb                | (X)                                    | 55.8                  | (X) 66.2                               |  |
| 308007  | Plastics products consumed in the form of sheets, rods, tubes, and other shapes  |                       | (S)                                    | 33.3                  | 217.8                                  |  |
| 289101  | Glues and adhesives  | mil lb                | (X)                                    | 48.2                  | (X) 45.6                               |  |
| 322931  | Glass fiber (textile type, bonded mat type, etc.)  | 1,000 lb              | (S)                                    | 34.3                  | (S) 22.0                               |  |
| 329103  | Glass fiber (textile type, bonded mat type, etc.)  | 1,000 lb              | (S)                                    | 69.0                  | (S) 47.9                               |  |
| 331212  | Abrasives and miscellaneous nonmetallic minerals products  | 1,000 s tons          | (X)                                    | (D)                   | (X) 13.6                               |  |
| 335301  | Crude blast furnace slag   | do                    | (S)                                    | 34.0                  | 2 123.3                                |  |
| 349702  | Aluminum sheet, plate, and foil  | do                    | *10.0                                  | 12.2                  | 18.4                                   |  |
| 970099  | Converted aluminum foil  | mil lb                | (S)                                    | 22.2                  | 4.0<br>(S) 7.9                         |  |
| 971000  | All other materials and components, parts, containers, and supplies  |                       | (X)                                    | 311.9                 | 20.4                                   |  |
| 971000  | Materials, parts, containers, and supplies, n.s.k. <sup>2</sup>  |                       | (X)                                    | 104.8                 | 307.0<br>51.1                          |  |
| <b>INDUSTRY 3297, NONCLAY REFRACTORIES</b>            |  |                       |  |                       |  |  |
| Materials, parts, containers, and supplies            |  |                       |  |                       |  |  |
| 145001  | Clay, ceramic, and refractory minerals   | 1,000 s tons          | (X)                                    | 367.5                 | (X) 277.8                              |  |
| 329502  | Dead-burned magnesia or magnesite  | do                    | (S)                                    | 105.8                 | 291.7                                  |  |
| 320591  | Refractories, clay or nonclay  | do                    | 163.1                                  | 38.4                  | 65.4                                   |  |
| 280001  | Industrial chemicals   |                       | (S)                                    | 41.4                  | 47.8                                   |  |
| 970099  | All other materials and components, parts, containers, and supplies  |                       | (X)                                    | 10.1                  | 6.6                                    |  |
| 971000  | Materials, parts, containers, and supplies, n.s.k. <sup>2</sup>  |                       | (X)                                    | 117.5                 | 974.2                                  |  |
| 971000  | Materials, parts, containers, and supplies, n.s.k. <sup>2</sup>  |                       | (X)                                    | 54.3                  | 31.6                                   |  |

See footnotes at end of table.

Table 7. Materials Consumed by Kind: 1987 and 1982—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendices. For meaning of abbreviations and symbols, see introductory text]

| 1987<br>material<br>code | Material   | 1987                  |  | 1982                  |  |
|--------------------------|--|-----------------------|--|-----------------------|--|
|                          |  | Quantity <sup>1</sup> | Delivered cost<br>(million<br>dollars) | Quantity <sup>1</sup> | Delivered cost<br>(million<br>dollars) |
|                          | <b>INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.</b> |                       |  |                       |  |
|                          | (Material data were not collected for this industry.)      |                       |  |                       |  |

<sup>1</sup>For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated; if 30 percent or more is estimated, figure is replaced by (S).

<sup>2</sup>Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.



## APPENDIX A. Explanation of Terms

This appendix is in two sections. Section 1 includes items requested of all establishments mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) not included on the report forms but derived from information collected on the forms. Section 2 covers supplementary items requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in table 3c of this report.

### SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

**Number of establishments and companies**—As discussed in the Introduction, a separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction of the General Summary subject report.

**Employment and related items**—The report forms requested separate information on production workers for a specific payroll period within each quarter of the year and on other employees as of the payroll period which included the 12th of March.

**All employees**—This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods.

Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

**Production workers**—This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

**All other employees**—This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office function, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations to the plant and utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls also was requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multiestablishment companies. However, these figures are not included in the totals for individual

industries shown in this report. They are included in the general summary and geographic area reports as a separate category.

**Payroll**—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1987. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payroll of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' Social Security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

**Production-worker hours**—This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

**Cost of materials**—This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (1) all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year, (2) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by

others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

**Specific materials consumed**—In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Information on the establishments consuming less than a specified amount (usually \$10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the introduction for the importance of administrative records in the industry.)

**Value of shipments**—This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further processing. Included are all items made by or for the establishments from materials owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of "all other costs" (including company overhead) and profit. (See discussion of duplication of data below.)

**Individual products**—As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1987 census program, information was collected on the output of approximately 11,000 individual product items. The term "product", as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases, it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 terms; whereas, "motor gasoline" was reported as a single item.

Approximately 6,600 of the product items were listed separately on the 1987 census report forms. Data for

about 4,400 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1987 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a-2).

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1982 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

**Classes of products**—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1987 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

**Duplication in cost of materials and value of shipments**—The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the

addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the United States level and beginning in 1964, for all geographic levels.

**Value added by manufacture**—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments (see footnote in table 1a), value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

"Value added" avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

**New and used capital expenditures**—For establishments in operation and any known plants under construction, manufacturers were asked to report their new expenditures for (1) permanent additions and major alterations to

manufacturing establishments, and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

The totals for new expenditures include expenditures leased from nonmanufacturing concerns through capital leases, new facilities owned by the Federal Government but operated under contract by private companies, and plant and equipment furnished to the manufacturer by communities and nonprofit organizations. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers also were requested to report the value of all used buildings and equipment purchased during the year at the purchase price. For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in table 3b.

**End-of-year inventories**—Respondents were asked to report their 1986 and 1987 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

## SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

The following items were collected only from establishments included in the ASM sample:

- 1. Supplemental labor costs**—Supplemental labor costs are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not

Because of this change in reporting instructions, the 1982 through 1987 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by another establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for individual industries, industry groups, and "all manufacturing", which are aggregates of figures reported by establishments in specified industries.

**Specialization and coverage ratios**—These items are not collected on the report forms but are derived from the data shown in table 5b. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

As noted in the introduction, an establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in tables 1a through 5a and data on product shipments shown in tables 6a through 6c.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans.

They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records generally do not provide reliable figures on net employee benefits of these types.

**2. Retirements of depreciable assets**—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1987. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

**3. Depreciation charges for fixed assets**—This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

**4. Rental payments**—Total rental payments is collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets, and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

**5. Depreciable assets**—Total value of gross depreciable assets is collected on all census forms.

However, the detail for depreciable assets is collected only on the ASM forms. The data encompass all fixed depreciable assets on the books of establishments at the beginning and end of the year. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets, including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year, rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress. In addition, respondents were requested to make certain that assets at the beginning of the year plus new and used capital expenditures, less retirements, equalled assets at the end of the year.

**6. New and used capital expenditures**—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)

**7. Quantity of electric energy consumed for heat and power**—Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the ASM forms. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

**8. Breakdown of new capital expenditures for machinery and equipment**—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement.

Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

9. **Foreign content of cost of materials**—Establishments included in the ASM sample panel were requested to provide information on foreign-made materials purchased or transferred from foreign sources. This includes materials acquired from a central warehouse or other domestic establishment of the same company but made in an operation outside of the 50 States, District of Columbia, Puerto Rico, or U.S. territories.
10. **Cost of purchased services**—ASM establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, and communication services. Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment, such as painting, roof repairs, replacing parts, and overhauling equipment. Such payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that were capitalized are considered capital expenditures for used buildings and machinery and are, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Three basic approaches were utilized to produce these statistics.

1. For items 1 through 6, data were estimated (imputed) for all non-ASM establishments using the available data in the establishment record and industry-based parameters. The statistics were then generated by simply tabulating all census records including the imputed value for non-ASM establishments and the unweighted value for ASM establishments. Separate imputation rates were developed and are shown in the table. For quantity of purchased electricity for heat and power (item 7), a similar procedure was used; however, the imputation parameters were geographically-based instead of industry-based. For quantities of generated less sold electricity, no imputation was performed for non-ASM establishments. The estimates for these items are simply tabulations of unweighted ASM values.

Since the published statistics for these items were developed from the complete census universe and not just the ASM establishments, there are no sampling variances associated with these statistics. However, there is an unknown level of bias for each of the items due to the imputation of the non-ASM establishments. This bias is felt to be small due to the strong correlation between the items being imputed and the collected items that were used to generate the impute values.

2. For items 8 and 9, the estimates were developed using a ratio estimation methodology. For item 8, an estimate of the breakout of new capital expenditures for machinery and equipment into the three categories was made from ASM establishments reporting these categories. The estimated proportions were then applied to the corresponding Census value for new capital expenditures for machinery and equipment to produce the estimates.

The estimates for item 9, foreign content of cost of materials, were developed in a similar manner based on costs of parts, supplies, and components (item 5a) as the control total for the three categories.

For items 8 and 9, an adjustment ratio of the following form was computed:

$$R_j = \frac{NMC}{TMEasm}$$

where:

NMC = the census value of new capital expenditures for machinery and equipment

TMEasm = the weighted ASM value of new capital expenditures for machinery and equipment from reporters of the detailed breakout data

3. For item 10, cost of purchased services, the estimates were made by simply tabulating weighted data for all the ASM records that reported the item. A response coverage ratio (a measure of the extent to which respondents reported for each item) is shown in table 3c for the three types of services. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight, see appendix B) for those ASM establishments that reported the specific inquiry to the weighted total employment for all ASM establishments classified in the industry.

# APPENDIX B.

## Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies

### DESCRIPTION OF SURVEY SAMPLE

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 56,000 manufacturing establishments selected from a total of about 220,000 establishments. These 220,000 establishments represent all manufacturing establishments of multiunit companies and all single establishment companies mailed schedules in the 1982 Census of Manufactures. This mail portion is supplemented annually by a Social Security Administration list of new manufacturing establishments opened after 1982 and a list of new multiunit manufacturing establishments identified from the Census Bureau's Company Organization Survey.

The 1984 through 1988 ASM sample differs slightly from the previous sample. For the current panel, all establishments of companies with 1982 shipments in manufacturing in excess of \$500 million were included in the survey panel with certainty. There are approximately 500 such companies collectively accounting for approximately 18,000 establishments. For the remaining portion of the mail survey, the establishment was defined as the sampling unit. For this portion, all establishments with 250 employees or more and establishments with a very large value of shipments also were included in the survey panel with certainty. A total of 12,100 establishments were selected from this portion of the universe with certainty. Therefore, of the 56,000 manufacturing establishments included in the ASM panel, approximately 31,000 are selected with certainty. These certainty establishments collectively account for approximately 80 percent of the total value of shipments in the 1982 census.

Smaller establishments in the remaining portion of the mail survey were sampled with probabilities ranging from 0.999 to 0.005 in accordance with mathematical theory for optimum allocation of a sample. The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. The measures of size depend directly upon each establishment's 1982 product class values and the historic variability of the year-to-year shipments of each product class. Product classes displaying more volatile year-to-year change in shipments at the establishment level were sampled at a heavier rate.

This method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight differences in employment, value added, and other

general statistics, since these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of small establishments out of a given sample panel without introducing a bias into the survey estimates.

The nonmail portion of the survey includes all single-establishment companies that were tabulated as administrative records in the 1982 Census of Manufactures. Although this portion contained approximately 130,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of the Internal Revenue Service and the Social Security Administration. This administrative-record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under conditions which safeguard the confidentiality of both tax and census records. Estimates of data other than payroll and employment for these small establishments were developed from industry averages.

The corresponding estimates for the mail and nonmail establishments were added together, along with the base-year differences, as defined in the Description of Estimating Procedure section, to produce the figures shown in this publication.

### DESCRIPTION OF ESTIMATING PROCEDURES

Most of the ASM estimates for the years 1983-1986 were computed using a difference estimation procedure. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1982 census published number for an item total and the linear ASM estimate of the total for 1982. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

These base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1983-1986. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.

The 1987 sample estimates for the purchased service items, shown in table 3c, are strictly ASM linear estimates, however, developed only from ASM establishments that reported the specific item.

The remaining estimates in table 3c, showing the breakdown of expenditures for new machinery and equipment and costs of parts (separated into purchases from foreign sources and purchases from domestic sources), were computed as ratio estimates. To do this, linear estimates of the new machinery detail items were developed from the ASM establishments and were ratio adjusted to the corresponding census total for new machinery. In a similar fashion, the ASM linear estimates of the detailed purchased materials items were ratio adjusted to the corresponding census total for cost of parts.

## QUALIFICATIONS OF THE DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sampled lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the differences between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of the estimates.

The particular sample selected for the ASM is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. They are presented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
2. From two standard errors below to two standard errors above the derived estimate for about 19 of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown as 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total and almost certain confidence that the interval 47,000 to 53,000 includes the complete coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions, and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.

# APPENDIX C.

## Changes in Census of Manufactures Product Classes for 1987

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product classes were revised for 1987. Listed below are the revisions to the product classes]

| 1987  | 1982                             | 1987           | 1982   | 1987  | 1982   | 1987  | 1982                             |
|-------|----------------------------------|----------------|--|-------|--|-------|----------------------------------|
| 30521 | 30411                            | 30899<br>3089A | 3079K pt                                     | 34919 | 34948  | 35483 | 36233                            |
| 30522 | 30412                            | 32295          | 32291 pt                                     | 34921 | 3494B  | 35484 | 35496                            |
| 30523 | 30413                            | 32296          | 32292 pt                                     | 34922 | 3494C  | 35485 | 35495 pt<br>35497                |
| 30524 | 30414                            | 32297          | 32294 pt                                     | 34923 | 3494D  | 35533 | 35531 pt                         |
| 30525 | 30415                            | 32298          | 32291 pt<br>32292 pt<br>32294 pt             | 34924 | 3494E  | 35534 | 35532 pt                         |
| 30526 | 30416                            | 32311          | 32317  | 34925 | 3494F  | 35543 | 35541<br>35542 pt                |
| 30534 | 32934                            | 32312          | 32317  | 34926 | 3494G  | 35544 | 35542 pt                         |
| 30535 | 32935                            | 32927          | 32928<br>32929                               | 3523C | 35234 pt<br>35237<br>35238 pt                | 35558 | 35557 pt                         |
| 30537 | 32937                            | 32961          | 32963<br>32965                               | 3523E | 35234 pt<br>35238 pt                         | 35561 | 35511                            |
| 30538 | 32938                            | 32962          | 32964<br>32966                               | 3523F | 3523A<br>3523B                               | 35562 | 35512                            |
| 30611 | 3069A pt                         | 33152          | 33152<br>34967                               | 35246 | 35243<br>35245                               | 35563 | 35513 pt                         |
| 30612 | 3069A pt                         | 33391          | 33331  | 3531A | 35311  | 35591 | 35591<br>35699 pt                |
| 30613 | 3069A pt                         | 33392          | 33334  | 3531B | 35312  | 35596 | 35595 pt                         |
| 30614 | 3069B pt                         | 33398          | 33321<br>33323<br>33399                      | 3531C | 35317  | 35599 | 35595 pt<br>36360<br>36362       |
| 30615 | 3069B pt                         | 30820          | 3079K pt                                     | 3531E | 35314 pt                                     | 35616 | 3561C                            |
| 30617 | 3069B pt                         | 33561          | 33569  | 3531F | 35316  | 35631 | 35631 pt                         |
| 3069C | 3069C<br>35557 pt                | 33562<br>33563 |  | 3531G | 35318 pt                                     | 35651 | 35513 pt<br>35514 pt<br>35691 pt |
| 3069E | 30310                            | 33630          | 33611  | 3531H | 35313 pt<br>35318 pt<br>35319 pt             | 35652 | 35513 pt<br>35514 pt<br>35691 pt |
| 30810 | 30792                            | 33640          | 33620 pt<br>33691 pt<br>33692 pt<br>33693 pt | 3531K | 35319 pt<br>35361 pt<br>35371 pt             | 35676 | 35672                            |
| 30820 | 3079K pt                         | 33650          | 33612  | 3531M | 35313 pt<br>35314 pt<br>35319 pt<br>35372 pt | 35692 | 35694<br>35695<br>35696          |
| 30830 | 3079K pt                         | 33660          | 33620 pt                                     |       |  | 35697 | 35699 pt                         |
| 30840 | 30794                            | 33690          | 33691 pt<br>33692 pt<br>33693 pt             | 35337 | 35331<br>35332 pt                            | 35698 |                                  |
| 30850 | 30795                            | 34234          | 34232 pt                                     |       |  | 35711 | 35731<br>36629 pt                |
| 30861 | 30797                            | 34235          | 34232 pt<br>35531 pt<br>35532 pt             | 35338 | 35332 pt                                     | 35712 | 35734 pt<br>35735 pt             |
| 30862 |                                  | 34236          | 34233  | 35339 | 35333  | 35721 | 35732 pt                         |
| 30863 |                                  | 34441          | 34446  | 3533A | 35335  | 35722 | 35734 pt<br>35735 pt             |
| 30864 |                                  | 34443          |  | 3533B | 35336  | 35751 | 35732 pt<br>36612 pt             |
| 30865 |                                  | 34447          |  | 35363 | 35361 pt                                     |       |                                  |
| 30866 |                                  | 34448          |  | 35364 | 35362 pt                                     |       |                                  |
| 30870 | 3079K pt                         | 34461          | 34460  | 35373 | 35362 pt<br>35371 pt                         | 35752 | 35734 pt<br>35735 pt             |
| 30880 | 3079J pt<br>3079K pt             | 34462          |  | 35374 | 35362 pt<br>35372 pt                         | 35771 | 35732 pt                         |
| 30891 | 3079J pt<br>3079K pt             | 34463          |  | 3541D | 35411<br>35412                               | 35772 | 35734 pt<br>35735 pt             |
| 30892 | 3079J pt<br>3079K pt             | 34464          |  | 35430 | 35650  | 35781 | 35743                            |
| 30893 | 3079J pt<br>3079K pt             | 34465          |  | 35454 | 35453  | 35782 | 35744                            |
| 30894 | 3079J pt<br>3079K pt             | 34696          | 34699  | 35455 | 35452  | 35783 | 35745                            |
| 30895 | 3079J pt                         | 34911          | 3494A  | 35481 | 36231  | 3585C | 3585A<br>36993                   |
| 30896 | 2499A pt<br>3079J pt<br>3079K pt | 34912          |  |       |  | 3585D | 3585B<br>36994 pt                |
| 30897 | 3079J pt<br>3079K pt             | 34913          |  |       |  |       |                                  |
| 30898 | 3079J pt<br>3079K pt             | 34914          |  |       |  |       |                                  |
|       |                                  | 34915          |  |       |  |       |                                  |
|       |                                  | 34916          |  |       |  |       |                                  |
|       |                                  | 34917          | 34949  |       |  |       |                                  |
|       |                                  | 34918          | 34947  | 35482 | 36232  |       |                                  |

| 1987  | 1982                       | 1987           | 1982                 | 1987                | 1982                 | 1987           | 1982                         |
|-------|----------------------------|----------------|----------------------|---------------------|----------------------|----------------|------------------------------|
| 35931 | 35996<br>35997             | 36411          | 36410                | 36991—Con.<br>36995 | 36629 pt—Con.        | 38731—Con.     | 38734—Con.<br>38736<br>38737 |
| 35932 | 35998                      | 36412          | 36994 pt             | 36997               | 35497 pt<br>36629 pt | 39113          | 39112                        |
| 35933 | 35999                      | 36520          | 36521 pt             | 36998               | 36994 pt             | 39114          |                              |
| 35941 | 35617<br>35618<br>35631 pt | 36613          | 35732 pt<br>36612 pt | 3714A               | 37143                | 39153<br>39154 | 39151                        |
| 35942 | 3561A<br>3561B<br>35631 pt | 36614          | 36612 pt             | 37999               | 37994<br>37998       | 39447          | 36629 pt<br>39447            |
| 35961 | 35760                      | 36631          | 36621<br>36629 pt    | 38121               | 38111                | 39493          | 39494 pt                     |
| 35962 |                            | 36632          | 36622                | 38122               | 36625 pt<br>36629    | 39495          | 3079k pt                     |
| 35963 |                            | 36691          | 36624                | 38210               | 38112<br>38113 pt    | 39496          | 39494 pt                     |
| 36123 | 36125                      | 36692          | 36626                | 38260               | 38320<br>38326       | 39523          | 39521<br>39522 pt            |
| 36126 |                            | 36693          | 36628                | 38271               | 38324                | 39524          | 39522 pt                     |
| 36251 | 36138 pt<br>36794          | 36714          | 36711<br>36712       | 38272<br>38273      | 38325                | 39651          | 39630                        |
| 36252 | 36221                      | 36715          | 36799 pt             | 38295               | 36625 pt<br>38293    | 39654          | 39641                        |
| 36253 | 36222                      | 36720          | 36797                | 38296               | 38113 pt             | 39656          | 39642                        |
| 36254 | 36138 pt<br>36223          | 36799          | 36629 pt<br>36799 pt | 38440               | 36931                | 39998          | 39620                        |
| 36330 | 36331<br>36333             | 36950          | 35732 pt<br>36792    | 38450               | 36930<br>36933       | 39999          | 39995                        |
| 36395 | 36361<br>36394<br>36399    | 36991<br>36992 | 36629 pt             | 38731               | 38734                | 97372          | 36522                        |
|       |                            |                |                      |                     |                      | 97819          | 36521 pt                     |

# APPENDIX D.

## Changes in Census of Manufactures

### Product Codes for 1987

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product codes were revised for 1987. Listed below are the revisions to the product codes. The terms published and collected are defined as follows: (1) published refers to the code used in the published reports for 1987 and 1982, and (2) collected refers to the code appearing on the report forms for 1987.]

| 1987 published | 1987 collected | 1982 published                   | 1987 published | 1987 collected | 1982 published  | 1987 published | 1987 collected | 1982 published  | 1987 published | 1987 collected    | 1982 published  |
|----------------|----------------|----------------------------------|----------------|----------------|---|----------------|----------------|---|----------------|-------------------|---|
| 30118 00       | 30118 00       | 30118 19<br>30118 20             | 30539 77       | 32939 77       | 32939 77  | 30830 11       | 30793 01       | 3079K 90  | 30892 20—      | 3079D 33—<br>Con. | 3079J 61 pt<br>—Con.<br>3079J 66 pt<br>3079K 93 pt  |
|                |                |                                  | 30539 79       | 32939 79       | 32939 79  | 30830 13       | 30793 03       |   |                |                   |   |
|                |                |                                  | 30539 81       | 32939 81       | 32939 81  | 30830 19       | 30793 09       |   |                |                   |   |
| 3011A 39       | 3011A 39       | 3011A 33<br>3011A 35             |                |                |   | 30840 11       | 30794 21       | 30794 21  | 30892 30       | 3079D 35          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 93 pt |
| 3011C 29       | 3011C 29       | 3011C 24<br>3011C 26<br>3011C 27 | 30611 00       | 3069A 00       | 3069A 11  | 30840 12       | 30794 22       | 30794 22  |                |                   |   |
|                |                |                                  | 30612 00       | 3069A 00       | 3069A 12<br>3069A 15  | 30840 13       | 30794 23       | 30794 23  |                |                   |   |
| 30521 00       | 30411 00       | 30411 00                         |                |                |   | 30840 14       | 30794 24       | 30794 24  |                |                   |   |
| 30522 00       | 30412 00       | 30412 00                         | 30613 00       | 3069A 00       | 3069A 13<br>3069A 14<br>3069A 16  | 30840 15       | 30794 25       | 30794 25  | 30892 90       | 3079D 39          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 93 pt |
| 30523 00       | 30413 00       | 30413 00                         |                |                |   | 30840 19       | 30794 26       | 30794 26  |                |                   |   |
| 30524 00       | 30414 00       | 30414 00                         | 30614 00       | 3069B 00       | 3069B 11  | 30850 00       | 30795 00       | 30795 00  |                |                   |   |
| 30525 00       | 30415 00       | 30415 00                         |                |                |   | 30861 00       | 30797 41       | 30797 41  |                |                   |   |
| 30526 00       | 30416 00       | 30416 00                         |                |                |   | 30862 10       | 30797 51       | 30797 42  | 30893 00       | 3079F 22          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 93 pt |
| 30534 11       | 32934 11       | 32934 11                         | 30616 00       | 3069B 00       | 3069B 21  | 30862 20       | 30797 53       |   |                |                   |   |
| 30534 13       | 32934 13       | 32934 13                         | 30617 00       | 3069B 00       | 3069B 29  | 30862 90       | 30797 59       |   |                |                   |   |
| 30534 15       | 32934 15       | 32934 15                         |                |                |   | 30863 10       | 30797 61       | 30797 44  |                |                   |   |
| 30534 17       | 32934 17       | 32934 17                         |                |                |   | 30863 90       | 30797 69       |   |                |                   |   |
| 30535 11       | 32935 11       | 32935 11                         | 3069C 12       | 35558 72       | 35557 72  | 30864 10       | 30797 71       | 30797 45  | 30894 01       | 30798 01          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30535 13       | 32935 13       | 32935 13                         | 3069C 30       | 35558 76       | 35557 76  | 30864 20       | 30797 73       |   |                |                   |   |
| 30535 15       | 32935 15       | 32935 15                         | 3069D 20       | 3069D 20       | 3069D 17<br>3069D 19  | 30864 30       | 30797 75       |   |                |                   |   |
| 30535 17       | 32935 17       | 32935 17                         | 3069D 42       | 3069D 42       | 3069D 55<br>3069D 58  | 30864 90       | 30797 79       |   |                |                   |   |
| 30535 19       | 32935 19       | 32935 19                         |                |                |   | 30865 10       | 30797 81       | 30797 46  | 30894 02       | 30798 02          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30535 21       | 32935 21       | 32935 21                         | 3069E 20       | 30310 00       | 30310 00  | 30866 10       | 30797 43       | 30797 43  |                |                   |   |
| 30535 23       | 32935 23       | 32935 23                         |                |                |   | 30866 90       | 30797 47       | 30797 47  |                |                   |   |
| 30535 29       | 32935 29       | 32935 29                         | 30810 10       | 30792 11       | 30792 10 pt<br>30792 20 pt<br>30792 30 pt<br>30792 40 pt<br>30792 50 pt<br>30792 60 pt<br>30792 70 pt | 30870 12       | 30791 01       | 3079K 99  | 30894 03       | 30798 03          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30536 21       | 32936 21       | 32936 21                         |                |                |   | 30880 00       | 3079F 20       | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |                |                   |   |
| 30536 22       | 32936 22       | 32936 22                         | 30810 20       | 30792 12       | 30792 10 pt<br>30792 20 pt<br>30792 30 pt<br>30792 40 pt<br>30792 50 pt<br>30792 60 pt<br>30792 70 pt |                |                |   | 30894 04       | 30798 04          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30536 25       | 32936 25       | 32936 25                         |                |                |   | 30891 01       | 3079C 11       | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |                |                   |   |
| 30536 26       | 32936 26       | 32936 26                         | 30810 30       | 30792 13       | 30792 10 pt<br>30792 20 pt<br>30792 30 pt<br>30792 40 pt<br>30792 50 pt<br>30792 60 pt<br>30792 70 pt | 30891 03       | 3079C 13       | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30894 05       | 30798 05          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30536 30       | 32936 30       | 32936 30                         |                |                |   | 30891 09       | 3079C 19       | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |                |                   |   |
| 30536 35       | 32936 35       | 32936 35                         |                |                |   | 30892 10       | 3079D 31       | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30894 06       | 30798 06          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30537 29       | 32937 29       | 32937 29                         |                |                |   |                |                |   | 30894 07       | 30798 07          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30537 39       | 32937 39       | 32937 39                         | 30810 40       | 30792 14       | 30792 10 pt<br>30792 20 pt<br>30792 30 pt<br>30792 40 pt<br>30792 50 pt<br>30792 60 pt<br>30792 70 pt |                |                |   |                |                   |   |
| 30537 41       | 32937 41       | 32937 41                         |                |                |   | 30892 20       | 3079D 33       | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30894 09       | 30798 09          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt |
| 30537 43       | 32937 43       | 32937 43                         |                |                |   |                |                |   |                |                   |   |
| 30537 49       | 32937 49       | 32937 49                         |                |                |   |                |                |   | 30895 01       | 30799 01          | 3079J 61 pt   |
| 30538 10       | 32938 10       | 32938 10                         | 30810 50       | 30792 19       | 30792 10 pt<br>30792 20 pt<br>30792 30 pt<br>30792 40 pt<br>30792 50 pt<br>30792 60 pt<br>30792 70 pt |                |                |   |                |                   |   |
| 30538 13       | 32938 13       | 32938 13                         |                |                |   |                |                |   |                |                   |   |
| 30538 15       | 32938 15       | 32938 15                         |                |                |   |                |                |   |                |                   |   |
| 30538 17       | 32938 17       | 32938 17                         |                |                |   |                |                |   |                |                   |   |
| 30538 19       | 32938 19       | 32938 19                         | 30820 10       | 30796 01       | 3079K 80  |                |                |   |                |                   |   |
| 30539 70       | 32939 70       | 32939 70                         | 30820 20       | 30796 02       |   |                |                |   |                |                   |   |
| 30539 73       | 32939 73       | 32939 73                         | 30820 30       | 30796 03       |   |                |                |   |                |                   |   |
| 30539 75       | 32939 75       | 32939 75                         | 30820 40       | 30796 04       |   |                |                |   |                |                   |   |
|                |                |                                  | 30820 50       | 30796 05       |   |                |                |   |                |                   |   |
|                |                |                                  | 30820 60       | 30796 06       |   |                |                |   |                |                   |   |
|                |                |                                  | 30820 70       | 30796 07       |   |                |                |   |                |                   |   |
|                |                |                                  | 30820 80       | 30796 08       |   |                |                |   |                |                   |   |
|                |                |                                  | 30820 90       | 30796 19       |   |                |                |   |                |                   |   |

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| 1987 published    | 1987 collected    | 1982 published  | 1987 published    | 1987 collected       | 1982 published   | 1987 published       | 1987 collected       | 1982 published   | 1987 published | 1987 collected | 1982 published                   |
|-------------------|-------------------|---|-------------------|----------------------|--|----------------------|----------------------|--|----------------|----------------|----------------------------------|
| 30895 01—<br>Con. | 30799 01—<br>Con. | 3079J 61 pt<br>—Con.<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt       | 30896 22—<br>Con. | 3079A 21—<br>Con.    | 3079J 61 pt<br>—Con.<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt                      | 30898 05—<br>Con.    | 3079B 25—<br>Con.    | 3079J 61 pt<br>—Con.<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt                                     | 32927 15       | 32927 15       | 32929 11<br>32929 21             |
| 30895 02          | 30799 02          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt                | 30896 23          | 3079A 23             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt                | 30898 06             | 3079B 26             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt | 32927 34       | 32927 34       | 32929 34                         |
| 30895 03          | 30799 03          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt                | 30896 24          | 3079A 25             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt                | 30898 07             | 3079B 27             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt | 32927 78       | 32927 78       | 32929 51<br>32929 73<br>32929 75 |
| 30896 11          | 3079A 11          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30896 25          | 3079A 27             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt                | 30898 08             | 3079B 28             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3179K 99    | 32961 11       | 32961 11       | 32963 11<br>32965 11             |
| 30896 12          | 3079A 12          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30896 26          | 3079A 28             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt                | 30898 09             | 3079B 29             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt | 32961 38       | 32961 38       | 32963 38<br>32965 38             |
| 30896 13          | 3079A 13          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30896 27          | 2499A 94<br>3079A 29 | 2499A 94<br>3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt    | 30899 00             | 3079F 31             | 3079K 88   | 32961 98       | 32961 98       | 32963 98<br>32965 98             |
| 30896 14          | 3079A 14          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30897 01          | 3079F 25             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt                | 3089A 11             | 3079F 41             | 3079K 93 pt<br>3079K 94 pt<br>3079K 95 pt<br>3079K 99 pt   | 32962 31       | 32962 31       | 32964 31<br>32966 31             |
| 30896 15          | 3079A 15          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30897 09          | 3079F 27             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 95 pt                | 3089A 14             | 3079F 47             | 3079K 93 pt<br>3079K 94 pt<br>3079K 95 pt<br>3079K 99 pt   | 32962 45       | 32962 45       | 32964 45<br>32966 45             |
| 30896 16          | 3079A 16          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30898 01          | 3079B 21             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 95 pt                | 32295 00             | 32295 00             | 32291 00 pt  | 32962 51       | 32962 51       | 32964 51<br>32966 51             |
| 30896 17          | 3079A 17          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30898 02          | 3079B 22             | 3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt                | 32311 00<br>32312 00 | 32311 00<br>32312 00 | 32317 00   | 32962 61       | 32962 61       | 32964 61<br>32966 61             |
| 30896 18          | 3079A 18          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30898 03          | 3079B 23             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt | 32620 15             | 32620 15             | 32620 14<br>32620 52 pt  | 32620 19       | 32620 19       | 32620 18<br>32620 52 pt          |
| 30896 19          | 3079A 19          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30898 04          | 3079B 24             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt | 32630 15             | 32630 15             | 32630 14<br>32630 52 pt  | 32630 19       | 32630 19       | 32630 18<br>32630 52 pt          |
| 30896 21          | 3079A 20          | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 99 pt | 30898 05          | 3079B 25             | 3079J 61 pt<br>3079J 62 pt<br>3079J 63 pt<br>3079J 64 pt<br>3079J 65 pt<br>3079J 66 pt<br>3079K 94 pt<br>3079K 99 pt | 32752 11             | 32752 11             | 32752 00   | 32917 23       | 32917 23       | 32917 22<br>32917 24             |
| 30896 22          | 3079A 21          | 3079J 61 pt<br>3079J 62 pt  |                   |                      |  | 32917 40             | 32917 40             | 32917 26<br>32917 28<br>32917 39   | 32927 14       | 32927 14       | 32928 15<br>32928 17             |

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| 1987 published    | 1987 collected    | 1982 published   | 1987 published                   | 1987 collected                   | 1982 published   | 1987 published    | 1987 collected    | 1982 published    | 1987 published                               | 1987 collected                               | 1982 published |
|-------------------|-------------------|--|----------------------------------|----------------------------------|--|-------------------|-------------------|-------------------|--|--|----------------|
| 33152 03—<br>Con. | 33152 03—<br>Con. | 33152 11 pt<br>—Con.<br>34967 19 pt  | 33157 42—<br>Con.                | 33157 42—<br>Con.                | 33157 31 pt<br>—Con.<br>33157 71 pt                      | 33561 66—<br>Con. | 33561 66—<br>Con. | 33569 92—<br>Con. | 34236 21                                     | 34236 21                                     | 34233 21       |
| 33152 05          | 33152 05          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt                | 33157 43                         | 33157 43                         | 33157 31 pt<br>33157 61 pt<br>33157 71 pt                | 33630 00          | 33611 00          | 33611 00          | 34236 31                                     | 34236 31                                     | 34233 31       |
| 33152 07          | 33152 07          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33159 44<br>33159 45<br>33159 48 | 33159 44<br>33159 45<br>33159 48 | 33159 49   | 33640 11          | 33620 42          | 33620 42          | 34236 41                                     | 34236 41                                     | 34233 41       |
| 33152 09          | 33152 09          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33159 99                         | 33159 99                         | 33159 77<br>33159 98                                     | 33640 21          | 33691 51          | 33691 51          | 34236 99                                     | 34236 99                                     | 34233 99       |
| 33152 10          | 33152 10          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33211 21                         | 33211 21                         | 33211 22 pt<br>33211 24 pt<br>33211 27 pt<br>33211 30 pt | 33640 31          | 33692 31          | 33692 31          | 34292 12<br>34298 99                         | 34292 12<br>34298 99                         | 34298 98       |
| 33152 12          | 33152 12          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33211 23                         | 33211 23                         | 33211 22 pt<br>33211 24 pt<br>33211 27 pt<br>33211 30 pt | 33640 41          | 33693 71          | 33693 71          | 34320 01<br>34320 03                         | 34320 01<br>34320 03                         | 34320 04       |
| 33152 14          | 33152 14          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33211 25                         | 33211 25                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33640 51          | 33693 91          | 33693 91          | 34320 05<br>34320 07                         | 34320 05<br>34320 07                         | 34320 06       |
| 33152 16          | 33152 16          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33211 26                         | 33211 26                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33650 11          | 33612 11          | 33612 11          | 34292 12<br>34298 99                         | 34292 12<br>34298 99                         | 34298 98       |
| 33152 18          | 33152 18          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33211 28                         | 33211 28                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33650 31          | 33612 31          | 33612 31          | 34320 09<br>34320 11                         | 34320 09<br>34320 11                         | 34320 08       |
| 33152 20          | 33152 20          | 33152 11 pt<br>33152 13 pt<br>33152 17 pt<br>33152 19 pt<br>34967 11 pt<br>34967 13 pt<br>34967 17 pt<br>34967 19 pt | 33211 30                         | 33211 30                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33650 51          | 33612 51          | 33612 51          | 34320 14<br>34320 25<br>34320 35             | 34320 14<br>34320 25<br>34320 35             | 34320 98       |
| 33152 22          | 33152 22          | 33152 33 pt<br>34967 23 pt   | 33211 32                         | 33211 32                         | 33211 33 pt<br>33211 34 pt<br>33211 37 pt<br>33211 40 pt | 33650 73          | 33612 73          | 33612 73          | 34320 47<br>34320 48                         | 34320 47<br>34320 48                         | 34320 79       |
| 33152 24          | 33152 24          | 33152 23<br>34967 19 pt  | 33211 34                         | 33211 34                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33660 20          | 33620 20          | 33620 20          | 34320 67<br>34320 69                         | 34320 67<br>34320 69                         | 34320 65       |
| 33152 26          | 33152 26          | 33152 23<br>34967 19 pt  | 33211 36                         | 33211 36                         | 33211 33 pt<br>33211 34 pt<br>33211 37 pt<br>33211 40 pt | 33660 22          | 33620 22          | 33620 22          | 34320 71<br>34320 74<br>34320 75             | 34320 71<br>34320 74<br>34320 75             | 34320 98       |
| 33152 28          | 33152 28          | 33152 23<br>34967 19 pt  | 33211 38                         | 33211 38                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33660 23          | 33620 23          | 33620 23          | 34320 80<br>34320 82                         | 34320 80<br>34320 82                         | 34320 55       |
| 33152 30          | 33152 30          | 33152 23<br>34967 23 pt  | 33211 40                         | 33211 40                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33660 24          | 33620 24          | 33620 24          | 34320 84<br>34320 86                         | 34320 84<br>34320 86                         | 34320 56       |
| 33152 32          | 33152 32          | 33152 23<br>34967 19 pt  | 33211 42                         | 33211 42                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33660 51          | 33620 51          | 33620 51          | 34320 87                                     | 34320 87                                     | 34320 98 pt    |
| 33152 34          | 33152 34          | 33152 23<br>34967 19 pt  | 33211 44                         | 33211 44                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33660 61          | 33620 61 pt       | 33620 61 pt       | 34320 90<br>34320 91                         | 34320 90<br>34320 91                         | 34320 40       |
| 33152 36          | 33152 36          | 33152 23<br>34967 19 pt  | 33211 46                         | 33211 46                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33660 72          | 33620 72          | 33620 72          | 34320 92<br>34320 93                         | 34320 92<br>34320 93                         | 34320 42       |
| 33152 38          | 33152 38          | 33152 23<br>34967 19 pt  | 33211 48                         | 33211 48                         | 33211 33 pt<br>33211 36 pt<br>33211 39 pt<br>33211 42 pt | 33690 11          | 33691 61          | 33691 61          | 34320 99                                     | 34320 99                                     | 34320 98 pt    |
| 33152 40          | 33152 40          | 33152 23<br>34967 19 pt  | 33252 11                         | 33252 11                         | 33252 12<br>33252 13                                     | 33690 15          | 33692 11          | 33692 11          | 34320 94<br>34320 95                         | 34320 94<br>34320 95                         | 34320 43       |
| 33152 42          | 33152 42          | 33152 23<br>34967 19 pt  | 33391 00                         | 33331 00                         | 33331 00   | 33690 21          | 33692 33          | 33692 33          | 34320 96<br>34320 97                         | 34320 96<br>34320 97                         | 34320 44       |
| 33152 44          | 33152 44          | 33152 23<br>34967 19 pt  | 33392 31                         | 33334 31                         | 33334 31   | 33690 25          | 33692 41          | 33692 41          | 34320 99                                     | 34320 99                                     | 34320 98 pt    |
| 33152 46          | 33152 46          | 33152 23<br>34967 19 pt  | 33392 33                         | 33334 33                         | 33334 35 pt  | 33690 91          | 33693 94          | 33693 99          | 34432 44                                     | 34432 44                                     | 34432 45       |
| 33152 48          | 33152 48          | 33152 23<br>34967 19 pt  | 33392 35                         | 33334 35                         | 33334 35 pt  | 33690 98          | 33693 99          | 33693 99          | 34432 46<br>34432 48                         | 34432 46<br>34432 48                         | 34432 47       |
| 33152 50          | 33152 50          | 33152 23<br>34967 19 pt  | 33392 37                         | 33334 37                         | 33334 35 pt  | 33699 91          | 33699 91          | 33699 91          | 34432 52<br>34432 54<br>34432 56<br>34432 98 | 34432 52<br>34432 54<br>34432 56<br>34432 98 | 34432 99       |
| 33152 52          | 33152 52          | 33152 23<br>34967 19 pt  | 33392 39                         | 33334 39                         | 33334 38 pt  | 33699 98          | 33699 98          | 33699 98          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 47       |
| 33152 54          | 33152 54          | 33152 23<br>34967 19 pt  | 33392 41                         | 33334 41                         | 33334 41   | 33699 98          | 33699 98          | 33699 98          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 56          | 33152 56          | 33152 23<br>34967 19 pt  | 33392 43                         | 33334 43                         | 33334 45 pt  | 34234 11          | 34234 11          | 34234 11          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 58          | 33152 58          | 33152 23<br>34967 19 pt  | 33392 45                         | 33334 45                         | 33334 48 pt  | 34234 22          | 34234 22          | 34234 22          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 60          | 33152 60          | 33152 23<br>34967 19 pt  | 33392 47                         | 33334 47                         | 33334 45 pt  | 34234 33          | 34234 33          | 34234 33          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 62          | 33152 62          | 33152 23<br>34967 19 pt  | 33392 49                         | 33334 49                         | 33334 48 pt  | 34234 44          | 34234 44          | 34234 44          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 64          | 33152 64          | 33152 23<br>34967 19 pt  | 33392 51                         | 33334 51                         | 33334 35 pt<br>33334 38 pt<br>33334 45 pt<br>33334 48 pt | 34234 44          | 34234 44          | 34234 44          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 66          | 33152 66          | 33152 23<br>34967 19 pt  | 33392 53                         | 33334 53                         | 33334 55   | 34235 11          | 34235 11          | 34235 11          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 68          | 33152 68          | 33152 23<br>34967 19 pt  | 33392 55                         | 33334 55                         | 33334 55   | 34235 21          | 34235 21          | 34235 21          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 70          | 33152 70          | 33152 23<br>34967 19 pt  | 33398 01                         | 33321 00                         | 33321 00   | 34235 12          | 34235 12          | 34235 12          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 72          | 33152 72          | 33152 23<br>34967 19 pt  | 33398 05                         | 33323 00                         | 33323 00   | 34235 21          | 34235 21          | 34235 21          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 74          | 33152 74          | 33152 23<br>34967 19 pt  | 33398 73                         | 33329 73                         | 33329 85   | 34235 22          | 34235 22          | 34235 22          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 76          | 33152 76          | 33152 23<br>34967 19 pt  | 33398 99                         | 33329 99                         | 33329 23<br>33329 98<br>33329 81                         | 34235 31          | 34235 31          | 34235 31          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 78          | 33152 78          | 33152 23<br>34967 19 pt  | 33416 99                         | 33416 99                         | 33416 51<br>33416 98                                     | 34235 33          | 34235 33          | 34235 33          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 80          | 33152 80          | 33152 23<br>34967 19 pt  | 33542 61                         | 33542 61                         | 33542 51 pt<br>33542 53 pt                               | 34235 33          | 34235 33          | 34235 33          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 82          | 33152 82          | 33152 23<br>34967 19 pt  | 33542 63                         | 33542 63                         | 33542 51 pt<br>33542 53 pt                               | 34235 39          | 34235 39          | 34235 39          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |
| 33152 84          | 33152 84          | 33152 23<br>34967 19 pt  | 33561 66                         | 33561 66                         | 33561 66   | 34236 11          | 34236 11          | 34236 11          | 34432 44<br>34432 46<br>34432 48             | 34432 44<br>34432 46<br>34432 48             | 34432 49       |

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| 1987 published | 1987 collected | 1982 published | 1987 published       | 1987 collected       | 1982 published             | 1987 published | 1987 collected | 1982 published       | 1987 published   | 1987 collected   | 1982 published   |
|----------------|----------------|----------------|----------------------|----------------------|----------------------------|----------------|----------------|----------------------|--|--|--|
| 34434 17       | 34434 17       | 34434 12 pt    | 34463 12             | 34463 12             | 34460 46                   | 34913 35       | 3494A 45       | 3494A 45             | 34931 57   | 34931 57   | 34931 56<br>34931 58                                     |
| 34434 19       | 34434 19       | 34434 18 pt    | 34463 20<br>34463 22 | 34463 20<br>34463 22 | 34460 49                   | 34913 47       | 3494A 46       | 3494A 46             | 34931 99   | 34931 99   | 34931 63<br>34931 98                                     |
| 34435 21       | 34435 21       | 34435 20       | 34464 10             | 34464 10             | 34460 54 pt<br>34460 56 pt | 34913 59       | 3494A 47       | 3494A 47             | 34932 10<br>34932 20                                     | 34932 10<br>34932 20                                     | 34932 00   |
| 34435 23       | 34435 23       |                | 34464 13             | 34464 13             | 34460 54 pt<br>34460 56 pt | 34913 61       | 3494A 49       | 3494A 49             | 34944 21   | 34944 21   | 34944 11   |
| 34435 31       | 34435 31       | 34435 35       | 34464 16             | 34464 16             | 34460 54 pt<br>34460 56 pt | 34914 11       | 3494A 51       | 3494A 51             | 34944 31<br>34944 41<br>34944 51<br>34944 99             | 34944 31<br>34944 41<br>34944 51<br>34944 99             | 34944 19   |
| 34435 33       | 34435 33       |                | 34464 18             | 34464 18             | 34460 54 pt<br>34460 56 pt | 34914 13       | 3494A 52       | 3494A 52             | 34945 12<br>34945 14<br>34945 16<br>34945 17<br>34945 99 | 34945 12<br>34945 14<br>34945 16<br>34945 17<br>34945 99 | 34945 98   |
| 34438 03       | 34438 03       | 34438 04       | 34465 10             | 34465 10             | 34460 54 pt                | 34914 15       | 3494A 53       | 3494A 53             | 34961 22<br>34961 31                                     | 34961 22<br>34961 31                                     | 34961 21   |
| 34438 05       | 34438 05       |                | 34465 12             | 34465 12             | 34460 56 pt                | 34914 23       | 3494A 56       | 3494A 56             |  |  |  |
| 34438 14       | 34438 14       | 34438 15       | 34465 30             | 34465 30             | 34460 62                   | 34914 25       | 3494A 57       | 3494A 57             | 34964 41   | 34964 41   | 34964 31 pt<br>34964 61 pt<br>34964 71 pt<br>34964 99 pt |
| 34438 16       | 34438 16       |                | 34482 11             | 34482 11             | 34482 17<br>34482 27       | 34914 31       | 3494A 58       | 3494A 58             |  |  |  |
| 34439 15       | 34439 15       | 34439 21       | 34625 11             | 34625 11             | 34625 00                   | 34914 61       | 3494A 59       | 3494A 59             | 34964 43   | 34964 43   | 34964 31 pt<br>34964 61 pt<br>34964 71 pt<br>34964 99 pt |
| 34439 17       | 34439 17       |                | 34625 13             | 34625 13             |                            | 34915 11       | 3494A 61       | 3494A 61             |  |  |  |
| 34439 19       | 34439 19       |                | 34625 15             | 34625 15             |                            | 34915 23       | 3494A 63       | 3494A 63             | 34964 45   | 34964 45   | 34964 31 pt<br>34964 61 pt<br>34964 71 pt<br>34964 99 pt |
| 34439 31       | 34439 31       | 34439 30       | 34625 17             | 34625 17             |                            | 34915 35       | 3494A 65       | 3494A 65             |  |  |  |
| 34439 32       | 34439 32       |                | 34626 11             | 34626 11             | 34626 00                   | 34915 47       | 3494A 67       | 3494A 67             | 34964 51   | 34964 51   | 34964 31 pt<br>34964 61 pt<br>34964 71 pt<br>34964 99 pt |
| 34439 33       | 34439 33       |                | 34626 13             | 34626 13             |                            | 34915 61       | 3494A 69       | 3494A 69             |  |  |  |
| 34439 34       | 34439 34       |                | 34626 15             | 34626 15             |                            | 34916 11       | 3494A 31       | 3494A 31             | 34964 53   | 34964 53   | 34964 31 pt<br>34964 61 pt<br>34964 71 pt<br>34964 99 pt |
| 34439 51       | 34439 51       | 34439 56       | 34626 17             | 34626 17             |                            | 34916 23       | 3494A 32       | 3494A 32             |  |  |  |
| 34439 53       | 34439 53       |                | 34627 11             | 34627 11             | 34627 00                   | 34916 31       | 3494A 33       | 3494A 33             | 34964 55   | 34964 55   | 34964 31 pt<br>34964 61 pt<br>34964 71 pt<br>34964 99 pt |
| 34441 21       | 34441 21       | 34446 37       | 34627 13             | 34627 13             |                            | 34916 33       | 3494A 34       | 3494A 34             |  |  |  |
| 34441 23       | 34441 23       | 34446 36       | 34627 15             | 34627 15             |                            | 34916 41       | 3494A 35       | 3494A 35             | 34964 55   | 34964 55   | 34964 31 pt<br>34964 61 pt<br>34964 71 pt<br>34964 99 pt |
| 34441 27       | 34441 27       | 34446 34       | 34627 17             | 34627 17             |                            | 34916 53       | 3494A 36       | 3494A 36             |  |  |  |
| 34441 29       | 34441 29       | 34446 32       | 34628 11             | 34628 11             | 34628 00                   | 34916 65       | 3494A 38       | 3494A 38             | 34966 23   | 34966 23   | 34966 13   |
| 34443 11       | 34443 11       | 34446 21       | 34628 13             | 34628 13             |                            | 34916 77       | 3494A 71       | 3494A 71             | 34966 25   | 34966 25   |  |
| 34443 13       | 34443 13       |                | 34628 15             | 34628 15             |                            | 34916 79       | 3494A 75       | 3494A 75             | 34966 27   | 34966 27   | 34966 21   |
| 34443 21       | 34443 21       | 34446 25       | 34628 17             | 34628 17             |                            | 34916 98       | 3494A 98       | 3494A 98             | 34966 29   | 34966 29   |  |
| 34443 23       | 34443 23       |                | 34692 20             | 34692 20             | 34692 99                   | 34917 11       | 34949 11       | 34949 11             | 34968 45   | 34968 45   | 34968 49   |
| 34447 21       | 34447 21       | 34446 47       | 34692 88             | 34692 88             |                            | 34917 13       | 34949 13       | 34949 13             | 34968 46   | 34968 46   |  |
| 34447 25       | 34447 25       | 34446 46       | 34692 98             | 34692 98             |                            | 34917 15       | 34949 15       | 34949 15             | 34968 47   | 34968 47   |  |
| 34447 31       | 34447 31       | 34446 11       | 34790 10             | 34790 10             | 34790 19                   | 34917 27       | 34949 27       | 34949 21             | 34992 13   | 34992 13   | 34992 12<br>34992 19                                     |
| 34447 41       | 34447 41       | 34446 51       | 34790 11             | 34790 11             |                            |                |                | 34949 23<br>34949 25 |  |  |  |
| 34448 11       | 34448 11       | 34446 62 pt    | 34790 21             | 34790 21             |                            | 34918 00       | 34949 31       | 34949 31             | 34995 21   | 34995 21   | 34995 13<br>34995 15                                     |
| 34448 13       | 34448 13       | 34446 64 pt    | 34790 73             | 34790 73             | 34790 71                   | 34918 00       | 34947 00       | 34947 00             | 34995 31   | 34995 31   | 34995 19   |
| 34448 19       | 34448 19       |                | 34790 75             | 34790 75             |                            | 34918 00       | 34947 00       | 34947 00             | 34995 39   | 34995 39   |  |
| 34449 31       | 34449 31       | 34446 15       | 34911 11             | 3494A 11             | 3494A 11                   | 34918 00       | 34947 00       | 34947 00             | 34998 25   | 34998 25   | 34998 98   |
| 34449 41       | 34449 41       | 34446 62 pt    | 34911 21             | 3494A 12             | 3494A 12                   | 34918 00       | 34947 00       | 34947 00             | 34998 99   | 34998 99   |  |
| 34449 53       | 34449 53       | 34446 44       | 34911 34             | 3494A 14             | 3494A 14                   | 34917 31       | 34949 31       | 34949 31             | 35111 01   | 35111 01   | 35111 00   |
| 34449 55       | 34449 55       | 34446 42       | 34911 38             | 3494A 15             | 3494A 15                   | 34917 31       | 34949 31       | 34949 31             | 35111 02   | 35111 02   |  |
| 34449 62       | 34449 62       | 34446 62 pt    | 34911 43             | 3494A 17             | 3494A 17                   | 34917 31       | 34949 31       | 34949 31             | 35112 00   | 35112 00   | 35112 00 pt  |
| 34449 65       | 34449 65       | 34446 64 pt    | 34911 52             | 3494A 19             | 3494A 19                   | 34917 39       | 34949 39       | 34949 39             | 35112 21   | 35112 21   | 35112 01 pt  |
| 34449 98       | 34449 98       | 34446 98       | 34912 01             | 3494A 21             | 3494A 21                   | 34917 98       | 34949 98       | 34949 98             | 35112 15   | 35112 15   |  |
| 34461 10       | 34461 10       | 34460 07       | 34912 11             | 3494A 22             | 3494A 22                   | 34918 00       | 34947 00       | 34947 00             | 35112 16   | 35112 16   |  |
| 34461 12       | 34461 12       | 34460 09       | 34912 21             | 3494A 23             | 3494A 23                   | 34919 00       | 34948 00       | 34948 00             |  |  |  |
| 34461 15       | 34461 15       | 34460 12       | 34912 23             | 3494A 24             | 3494A 24                   | 34921 00       | 3494B 00       | 3494B 00             |  |  |  |
| 34461 17       | 34461 17       | 34460 17       | 34912 31             | 3494A 25             | 3494A 25                   | 34922 00       | 3494C 00       | 3494C 00             |  |  |  |
| 34462 10       | 34462 10       | 34460 31       | 34912 35             | 3494A 26             | 3494A 26                   | 34923 00       | 3494D 00       | 3494D 00             |  |  |  |
| 34462 12       | 34462 12       | 34460 36       | 34912 41             | 3494A 27             | 3494A 27                   | 34924 00       | 3494E 00       | 3494E 00             | 35112 22   | 35112 22   | 35112 01 pt  |
| 34462 22       | 34462 22       | 34460 22       | 34912 43             | 3494A 29             | 3494A 29                   | 34925 00       | 3494F 00       | 3494F 00             | 35112 23   | 35112 23   | 35112 08   |
| 34462 26       | 34462 26       | 34460 51       | 34913 11             | 3494A 39             | 3494A 39                   | 34926 00       | 3494G 00       | 3494G 00             | 35112 24   | 35112 24   | 35112 18   |
| 34463 10       | 34463 10       | 34460 41       | 34913 23             | 3494A 43             | 3494A 43                   | 34927 00       | 3494H 00       | 3494H 00             | 35112 24   | 35112 24   | 35112 09<br>35112 19                                     |

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| 1987 published | 1987 collected | 1982 published   | 1987 published | 1987 collected | 1982 published                         | 1987 published                   | 1987 collected                   | 1982 published          | 1987 published   | 1987 collected   | 1982 published                            |
|----------------|----------------|--|----------------|----------------|--|----------------------------------|----------------------------------|-------------------------|--|--|---|
| 35112 74       | 35112 74       | 35112 75 pt  | 3531E 00       | 3531E 00       | 35314 00 pt                            | 35337 22<br>35337 23             | 35337 22<br>35337 23             | 35331 41                | 35364 03   | 35364 03   | 35362 09<br>35362 15 pt                   |
| 35112 76       | 35112 76       | 35112 75 pt<br>35112 77  | 3531F 00       | 3531F 00       | 35316 00                               | 35337 24<br>35337 25             | 35337 24<br>35337 25             | 35331 46                | 35364 04   | 35364 04   | 35362 11<br>35362 15 pt                   |
| 35112 79       | 35112 79       | 35112 00 pt  | 3531G 00       | 3531G 00       | 35318 00 pt                            | 35337 26<br>35337 27             | 35337 26<br>35337 27             | 35331 43                | 35364 05   | 35364 05   | 35362 13<br>35362 15 pt                   |
| 35112 83       |                |  | 3531H 00       | 3531H 00       | 35313 00 pt<br>35318 00 pt<br>35319 85 | 35337 44                         | 35337 44                         | 35331 44                | 35364 06   | 35364 06   | 35362 14<br>35362 15 pt                   |
| 35199 01       | 35199 01       | 35199 98 pt  | 3531K 06       | 3531K 06       | 35319 06                               | 35337 45                         | 35337 45                         | 35331 45                |  |  |   |
| 35199 33       | 35199 26       | 35199 26   | 3531K 07       | 3531K 07       | 35319 07                               | 35337 47                         | 35337 47                         | 35331 47                | 35364 17   | 35364 17   | 35362 55 pt                               |
| 35199 41       | 35199 41       | 35199 03   | 3531K 11       | 3531K 11       | 35319 11                               | 35337 48                         | 35337 48                         | 35331 48                | 35364 52   | 35364 52   | 35362 52                                  |
| 35199 42       | 35199 42       |  | 3531K 20       | 3531K 20       | 35319 20                               | 35337 59                         | 35337 59                         | 35331 59                | 35364 54   | 35364 54   | 35362 55 pt                               |
| 35199 43       | 35199 43       | 35199 04   | 3531K 21       | 3531K 21       | 35319 21                               | 35337 61                         | 35337 61                         | 35332 61 pt             | 35373 01<br>35373 02   | 35373 01<br>35373 02   | 35371 23 pt                               |
| 35199 44       | 35199 44       |  | 3531K 22       | 3531K 22       | 35319 23                               | 35338 31                         | 35338 31                         | 35332 31                | 35373 03   | 35373 03   | 35371 11 pt                               |
| 35199 45       | 35199 45       | 35199 05   | 3531K 24       |                |  | 35338 51                         | 35338 51                         | 35332 51                | 35373 05   | 35373 05   | 35371 36 pt<br>35371 37 pt<br>35371 38 pt |
| 35199 46       | 35199 46       |  | 3531K 25       | 3531K 25       | 35319 25                               | 35338 55                         | 35338 55                         | 35332 55                |  |  |   |
| 35199 47       | 35199 47       | 35199 06 pt<br>35199 07 pt   | 3531K 27       | 3531K 27       | 35319 27                               | 35338 98                         | 35338 98                         | 35332 98                | 35373 06   | 35373 06   | 35371 36 pt<br>35371 37 pt<br>35371 38 pt |
| 35199 48       | 35199 48       | 35199 06 pt<br>35199 07 pt   | 3531K 53       | 3531K 53       | 35319 52                               | 35338 99                         | 35338 99                         | 35332 61 pt             |  |  |   |
| 35199 51       | 35199 51       | 35199 14   | 3531K 55       | 3531K 55       | 35319 55                               | 35339 12                         | 35339 12                         | 35333 12                | 35373 08   | 35373 08   | 35371 11 pt                               |
| 35199 52       | 35199 52       |  | 3531K 61       | 3531K 61       | 35363 36                               | 35339 13                         | 35339 13                         | 35333 13                | 35373 12   | 35373 12   | 35371 61                                  |
| 35199 53       | 35199 53       | 35199 15   | 3531K 70       | 3531K 70       | 35319 70                               | 35339 14                         | 35339 14                         | 35333 14                | 35373 15   | 35373 15   | 35371 23 pt<br>35371 41 pt                |
| 35199 54       | 35199 54       |  | 3531K 74       | 3531K 74       | 35319 72<br>35319 73                   | 35339 19                         | 35339 19                         | 35333 19                | 35373 16   | 35373 16   | 35371 11 pt                               |
| 35199 55       | 35199 55       | 35199 16   | 3531K 77       | 3531K 77       | 35319 75<br>35319 76                   | 35339 21                         | 35339 21                         | 35333 21                | 35373 17   | 35373 17   | 35371 36 pt<br>35371 37 pt<br>35371 38 pt |
| 35199 56       | 35199 56       |  | 3531K 82       | 3531K 82       | 35319 82                               | 35339 53                         | 35339 53                         | 35333 53                |  |  |   |
| 35199 57       | 35199 57       | 35199 17   | 3531K 90       | 3531K 40       | 35319 41                               | 35339 55                         | 35339 55                         | 35333 55                | 35373 18   | 35373 18   | 35371 11 pt                               |
| 35199 58       | 35199 58       |  | 3531K 91       | 35373 90       | 35371 91<br>35371 93                   | 35339 57                         | 35339 57                         | 35333 57                | 35373 19   | 35373 19   | 35371 65                                  |
| 35199 59       | 35199 59       | 35199 18   | 3531K 97       | 3531K 97       | 35319 97                               | 35339 61                         | 35339 61                         | 35333 61                | 35373 21   | 35373 21   | 35371 55                                  |
| 35199 60       | 35199 60       |  | 3531M 01       | 3531M 01       | 35313 00 pt                            | 35339 65                         | 35339 65                         | 35333 65                | 35373 25   | 35373 25   | 35371 99 pt                               |
| 35199 61       | 35199 61       | 35199 19   | 3531M 03       | 3531M 03       | 35314 00 pt                            | 35339 71                         | 35339 71                         | 35333 71                | 35373 26   | 35373 26   | 35371 75                                  |
| 35199 62       | 35199 62       |  | 3531M 05       | 3531M 05       | 35319 84 pt<br>35319 86 pt             | 35339 82                         | 35339 82                         | 35333 82                | 35373 28   | 35373 28   | 35371 81                                  |
| 35199 91       | 35199 91       | 35199 22 pt<br>35199 23 pt<br>35199 28 pt<br>35199 29 pt<br>35199 98 pt  | 3531M 07       | 3531M 07       | 35319 84 pt<br>35319 86 pt             | 35339 98                         | 35339 98                         | 35333 98                | 35373 29   | 35373 29   | 35371 83                                  |
| 35199 92       | 35199 92       | 35199 22 pt<br>35199 23 pt<br>35199 28 pt<br>35199 29 pt<br>35199 98 pt  | 3531M 09       | 3531M 09       | 35319 84 pt<br>35319 86 pt             | 3533A 10                         | 3533A 10                         | 35335 10                | 35373 31   | 35373 31   | 35371 71                                  |
| 35239 26       | 35239 26       | 35239 21<br>35239 25   | 3531M 15       | 3531M 19       | 35319 84 pt<br>35319 86 pt             | 3533B 21                         | 3533B 21                         | 35336 21                | 35373 32   | 35373 32   | 35371 85                                  |
| 35239 31       | 35239 31       | 35239 01<br>35239 02<br>35239 03<br>35239 04<br>35239 05<br>35239 06<br>35239 07<br>35239 08<br>35239 09<br>35239 11<br>35239 12<br>35239 19<br>35239 30 | 35329 33       | 35329 33       | 35329 31 pt<br>35329 35 pt             | 3533B 32<br>3533B 34             | 3533B 32<br>3533B 34             | 35336 31                | 35373 35   | 35364 41   | 35362 41                                  |
| 35239 53       | 35239 53       | 35239 50<br>35239 51   | 35329 34       | 35329 34       | 35329 31 pt<br>35329 35 pt             | 35363 01<br>35363 02<br>35363 03 | 35363 01<br>35363 02<br>35363 03 | 35361 11                | 35374 11   | 35374 11   | 35372 11                                  |
| 3523C 00       | 3523C 00       | 35234 00 pt<br>35237 00<br>35238 00 pt   | 35329 37       | 35329 37       | 35329 39                               | 35363 13                         | 35363 13                         | 35361 13                | 35374 17   | 35364 57   | 35362 57                                  |
| 3523E 00       | 3523E 00       | 35234 00 pt<br>35238 00 pt   | 35329 38       | 35329 41       | 35329 43                               | 35363 15                         | 35363 15                         | 35361 14                | 35374 19   | 35374 19   | 35372 85 pt                               |
| 3523F 00       | 3523F 00       | 3523A 00<br>3523B 00   | 35329 43       | 35329 43       |  | 35363 16                         | 35363 16                         | 35361 16                | 35419 21<br>35419 22<br>35419 23<br>35419 24<br>35419 25<br>35419 26 | 35419 21<br>35419 22<br>35419 23<br>35419 24<br>35419 25<br>35419 26 | 35419 41                                  |
| 35246 00       | 35246 00       | 35243 00<br>35245 00   | 35329 71       | 35329 71       | 35329 79                               | 35363 32                         | 35363 32                         | 35361 33<br>35361 39 pt | 35421 00   | 35421 00   | 35421 10<br>35421 20                      |
| 3531A 00       | 3531A 00       | 35311 00   | 35329 73       | 35329 73       | 35329 75                               | 35363 37<br>35363 38             | 35363 37<br>35363 38             | 35361 39 pt             | 35424 01<br>35424 02   | 35424 01<br>35424 02   | 35424 11                                  |
| 3531B 00       | 3531B 00       | 35312 00   | 35329 75       |                |  | 35364 01                         | 35364 01                         | 35362 07<br>35362 15 pt | 35424 03<br>35424 04<br>35424 05                                     | 35424 03<br>35424 04<br>35424 05                                     | 35424 75                                  |
| 3531C 00       | 3531C 00       | 35317 10<br>35317 20<br>35317 30   | 35337 17       | 35337 17       | 35331 17                               | 35364 02                         | 35364 02                         | 35362 08<br>35362 15 pt | 35430 11   | 35650 11   | 35650 11                                  |

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|----------------|----------------|-------------------------|----------------|----------------|--|----------------|----------------|---|
| 35430 98       | 35650 98       | 35650 98                | 35462 72       | 35462 72       | 35462 73<br>35462 74<br>35462 75<br>35462 76<br>35462 77<br>35462 78 | 35484 09       | 35496 19       | 35496 19  |
| 35441 23       | 35441 23       | 35441 29                |                |                |  | 35485 01       | 35497 61       | 35497 61  |
| 35441 25       | 35441 25       |                         |                |                |  | 35485 02       | 35497 65       | 35497 65  |
| 35441 42       | 35441 42       | 35441 91                |                |                |  | 35485 03       | 35497 67       | 35497 67  |
| 35441 44       | 35441 44       |                         | 35463 12       | 35463 12       | 35462 19   | 35485 04       | 35497 73       | 35497 73  |
| 35441 83       | 35441 83       | 35441 89                | 35463 14       | 35463 14       |  | 35485 05       | 35497 74       | 35497 63<br>35497 75                                  |
| 35441 89       | 35441 89       |                         | 35473 48       | 35473 48       | 35473 56   | 35485 07       | 35495 55       | 35495 55  |
| 35442 15       | 35442 15       | 35442 21<br>35442 25 pt | 35473 51       | 35473 51       |  | 35485 09       | 35497 81       | 35497 81  |
| 35442 16       | 35442 16       | 35442 25 pt             | 35473 52       | 35473 52       |  | 35492 13       | 35492 13       | 35492 19  |
| 35442 17       | 35442 17       | 35442 62 pt             | 35481 01       | 36231 14       | 36231 14   | 35492 18       | 35492 18       |   |
| 35442 18       | 35442 18       |                         | 35481 02       | 36231 16       | 36231 16   |                |                |   |
| 35442 19       | 35442 19       |                         | 35481 03       | 36231 31       | 36231 31   |                |                |   |
| 35442 23       | 35442 23       |                         | 35481 04       | 36231 32       | 36231 32   | 35495 01       | 35495 01       | 35495 10  |
| 35442 41       | 35442 41       | 35442 33                | 35481 05       | 36231 33       | 36231 33   | 35495 02       | 35495 02       |   |
| 35442 42       | 35442 42       |                         | 35481 06       | 36231 35       | 36231 35   | 35495 03       | 35495 03       |   |
| 35442 45       | 35442 45       | 35442 62 pt             | 35481 07       | 36231 52       | 36231 52   | 35495 92       | 35495 92       | 35495 98  |
| 35442 47       | 35442 47       |                         | 35481 08       | 36231 53       | 36231 53   | 35495 95       | 35495 95       |   |
| 35442 67       | 35442 67       |                         | 35481 09       | 36231 54       | 36231 54   | 35521 38       | 35521 38       | 35521 42<br>35521 47                                  |
| 35451 53       | 35451 53       | 35451 43<br>35451 44    | 35481 11       | 36231 56       | 36231 56   | 35521 39       | 35521 39       | 35521 46<br>35521 48                                  |
| 35451 54       | 35451 54       | 35451 48<br>35451 49    | 35481 12       | 36231 57       | 36231 57   |                |                |   |
| 35454 12       | 35454 12       | 35453 12                | 35481 19       | 36231 59       | 36231 59   | 35521 68       | 35521 68       | 35521 67  |
| 35454 14       | 35454 14       | 35453 14                | 35482 01       | 36232 01       | 36232 41   | 35521 69       | 35521 69       |   |
| 35454 17       | 35454 17       | 35453 17                | 35482 02       | 36232 02       | 36232 41   | 35521 84       | 35521 84       | 35521 86  |
| 35454 31       | 35454 31       | 35453 31                | 35482 03       | 36232 11       | 36232 11   | 35522 79       | 35522 79       | 35522 72<br>35522 99                                  |
| 35454 37       | 35454 37       | 35453 37                | 35482 04       | 36232 23       | 36232 23   | 35533 11       | 35533 11       | 35531 11  |
| 35454 38       | 35454 38       | 35453 38                | 35482 05       | 36232 25       | 36232 25   | 35533 13       | 35533 13       | 35531 13  |
| 35454 43       | 35454 43       | 35453 43                | 35482 06       | 36232 31       | 36232 31   | 35533 15       | 35533 15       | 35531 15  |
| 35454 45       | 35454 45       | 35453 45                | 35482 07       | 36232 43       | 36232 59 pt<br>36232 64 pt   | 35533 19       | 35533 19       | 35531 62  |
| 35454 51       | 35454 51       | 35453 51                | 35482 08       | 36232 45       | 36232 59 pt<br>36232 64 pt<br>36232 68 pt                            | 35533 21       | 35533 21       | 35531 73 pt   |
| 35454 59       | 35454 59       | 35453 59                | 35482 11       | 36232 52       | 36232 52   | 35533 25       | 35533 25       | 35531 75 pt   |
| 35454 98       | 35454 98       | 35453 98                | 35482 12       | 36232 54       | 36232 54   | 35533 29       | 35533 29       | 35531 98 pt   |
| 35455 11       | 35455 11       | 35452 11                | 35482 13       | 36232 55       | 36232 55   | 35533 31       | 35533 31       | 35531 73 pt   |
| 35455 13       | 35455 13       | 35452 13                | 35482 14       | 36232 58       | 36232 58   | 35533 33       | 35533 33       | 35531 75 pt   |
| 35455 15       | 35455 15       | 35452 15                | 35482 15       | 36232 62       | 36232 61<br>36232 65   | 35533 35       | 35533 35       | 35531 98 pt   |
| 35455 17       | 35455 17       | 35452 17                | 35482 16       | 36232 66       | 36232 64 pt<br>36232 68 pt   | 35533 37       | 35533 37       |   |
| 35455 21       | 35455 21       | 35452 21                | 35483 05       | 36233 13       | 36233 13   | 35533 39       | 35533 39       | 35531 17<br>35531 73 pt<br>35531 75 pt<br>35531 98 pt |
| 35455 61       | 35455 61       | 35452 61                | 35483 06       | 36233 23       | 36233 23   | 35533 87       | 35533 87       | 35531 87  |
| 35455 65       | 35455 65       | 35452 65                | 35483 07       | 36233 31       | 36233 31   | 35534 01       | 35534 01       | 35532 21  |
| 35455 71       | 35455 71       | 35452 71                | 35483 08       | 36233 52       | 36233 52   | 35534 02       | 35534 02       |   |
| 35455 81       | 35455 81       | 35452 99 pt<br>35455 83 | 35483 09       | 36233 61       | 36233 61   | 35534 03       | 35534 03       |   |
| 35455 91       | 35455 91       | 35452 92                | 35483 11       | 36233 71       | 36233 71   | 35534 04       | 35534 04       | 35532 98  |
| 35455 92       | 35455 92       |                         | 35483 19       | 36233 81       | 36233 81   | 35534 05       | 35534 05       |   |
| 35455 93       | 35455 93       | 35452 99 pt             | 35484 01       | 35496 01       | 35496 01   | 35534 06       | 35534 06       |   |
| 35455 94       | 35455 94       | 35452 94                | 35484 02       | 35496 05       | 35496 05   | 35534 07       | 35534 07       |   |
| 35455 95       | 35455 95       | 35452 95                | 35484 03       | 35496 09       | 35496 09   | 35534 08       | 35534 08       |   |
| 35455 96       | 35455 96       | 35452 99 pt<br>35455 97 | 35484 04       | 35496 15       | 35496 15   | 35534 09       | 35534 09       |   |
| 35455 97       | 35455 97       | 35455 98                | 35484 05       | 35496 17       | 35496 17   | 35534 11       | 35534 11       | 35532 81 pt   |
| 35455 98       | 35455 98       |                         |                |                |  | 35534 12       | 35534 12       | 35532 81 pt   |
| 35462 42       | 35462 42       | 35462 43                | 35484 06       | 35496 01       | 35496 01   | 35534 13       | 35534 13       | 35532 81 pt   |
| 35462 44       | 35462 44       |                         | 35484 07       | 35496 05       | 35496 05   | 35534 14       | 35534 14       | 35532 81 pt   |
| 35462 47       | 35462 47       | 35462 45<br>35462 49    | 35484 08       | 35496 09       | 35496 09   | 35534 15       | 35534 15       | 35532 81 pt   |
|                |                |                         | 35484 09       | 35496 13       | 35496 13   | 35534 16       | 35534 16       | 35532 81 pt   |
|                |                |                         | 35484 10       | 35496 17       | 35496 17   | 35534 17       | 35534 17       | 35532 81 pt   |
|                |                |                         | 35484 11       | 35496 21       | 35496 21   | 35534 18       | 35534 18       | 35532 81 pt   |
|                |                |                         | 35484 12       | 35496 25       | 35496 25   | 35534 19       | 35534 19       | 35532 81 pt   |
|                |                |                         | 35484 13       | 35496 29       | 35496 29   | 35534 20       | 35534 20       | 35532 81 pt   |
|                |                |                         | 35484 14       | 35496 33       | 35496 33   | 35534 21       | 35534 21       | 35532 81 pt   |
|                |                |                         | 35484 15       | 35496 37       | 35496 37   | 35534 22       | 35534 22       | 35532 81 pt   |
|                |                |                         | 35484 16       | 35496 41       | 35496 41   | 35534 23       | 35534 23       | 35532 81 pt   |
|                |                |                         | 35484 17       | 35496 45       | 35496 45   | 35534 24       | 35534 24       | 35532 81 pt   |
|                |                |                         | 35484 18       | 35496 49       | 35496 49   | 35534 25       | 35534 25       | 35532 81 pt   |
|                |                |                         | 35484 19       | 35496 53       | 35496 53   | 35534 26       | 35534 26       | 35532 81 pt   |
|                |                |                         | 35484 20       | 35496 57       | 35496 57   | 35534 27       | 35534 27       | 35532 81 pt   |
|                |                |                         | 35484 21       | 35496 61       | 35496 61   | 35534 28       | 35534 28       | 35532 81 pt   |
|                |                |                         | 35484 22       | 35496 65       | 35496 65   | 35534 29       | 35534 29       | 35532 81 pt   |
|                |                |                         | 35484 23       | 35496 69       | 35496 69   | 35534 30       | 35534 30       | 35532 81 pt   |
|                |                |                         | 35484 24       | 35496 73       | 35496 73   | 35534 31       | 35534 31       | 35532 81 pt   |
|                |                |                         | 35484 25       | 35496 77       | 35496 77   | 35534 32       | 35534 32       | 35532 81 pt   |
|                |                |                         | 35484 26       | 35496 81       | 35496 81   | 35534 33       | 35534 33       | 35532 81 pt   |
|                |                |                         | 35484 27       | 35496 85       | 35496 85   | 35534 34       | 35534 34       | 35532 81 pt   |
|                |                |                         | 35484 28       | 35496 89       | 35496 89   | 35534 35       | 35534 35       | 35532 81 pt   |
|                |                |                         | 35484 29       | 35496 93       | 35496 93   | 35534 36       | 35534 36       | 35532 81 pt   |
|                |                |                         | 35484 30       | 35496 97       | 35496 97   | 35534 37       | 35534 37       | 35532 81 pt   |
|                |                |                         | 35484 31       | 35496 101      | 35496 101  | 35534 38       | 35534 38       | 35532 81 pt   |
|                |                |                         | 35484 32       | 35496 105      | 35496 105  | 35534 39       | 35534 39       | 35532 81 pt   |
|                |                |                         | 35484 33       | 35496 109      | 35496 109  | 35534 40       | 35534 40       | 35532 81 pt   |
|                |                |                         | 35484 34       | 35496 113      | 35496 113  | 35534 41       | 35534 41       | 35532 81 pt   |
|                |                |                         | 35484 35       | 35496 117      | 35496 117  | 35534 42       | 35534 42       | 35532 81 pt   |
|                |                |                         | 35484 36       | 35496 121      | 35496 121  | 35534 43       | 35534 43       | 35532 81 pt   |
|                |                |                         | 35484 37       | 35496 125      | 35496 125  | 35534 44       | 35534 44       | 35532 81 pt   |
|                |                |                         | 35484 38       | 35496 129      | 35496 129  | 35534 45       | 35534 45       | 35532 81 pt   |
|                |                |                         | 35484 39       | 35496 133      | 35496 133  | 35534 46       | 35534 46       | 35532 81 pt   |
|                |                |                         | 35484 40       | 35496 137      | 35496 137  | 35534 47       | 35534 47       | 35532 81 pt   |
|                |                |                         | 35484 41       | 35496 141      | 35496 141  | 35534 48       | 35534 48       | 35532 81 pt   |
|                |                |                         | 35484 42       | 35496 145      | 35496 145  | 35534 49       | 35534 49       | 35532 81 pt   |
|                |                |                         | 35484 43       | 35496 149      | 35496 149  | 35534 50       | 35534 50       | 35532 81 pt   |
|                |                |                         | 35484 44       | 35496 153      | 35496 153  | 35534 51       | 35534 51       | 35532 81 pt   |
|                |                |                         | 35484 45       | 35496 157      | 35496 157  | 35534 52       | 35534 52       | 35532 81 pt   |
|                |                |                         | 35484 46       | 35496 161      | 35496 161  | 35534 53       | 35534 53       | 35532 81 pt   |
|                |                |                         | 35484 47       | 35496 165      | 35496 165  | 35534 54       | 35534 54       | 35532 81 pt   |
|                |                |                         | 35484 48       | 35496 169      | 35496 169  | 35534 55       | 35534 55       | 35532 81 pt   |
|                |                |                         | 35484 49       | 35496 173      | 35496 173  | 35534 56       | 35534 56       | 35532 81 pt</td                                       |

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| 1987 published | 1987 collected | 1982 published                      | 1987 published | 1987 collected | 1982 published | 1987 published | 1987 collected | 1982 published  | 1987 published       | 1987 collected       | 1982 published                      |
|----------------|----------------|-------------------------------------|----------------|----------------|----------------|----------------|----------------|---|----------------------|----------------------|-------------------------------------|
| 35561 07       | 35511 07       | 35511 91                            | 35593 01       | 35593 11       | 35593 11       | 35599 13       | 35599 13       | 35595 41 pt<br>35595 98 pt  | 35616 00             | 35616 00             | 3561C 00                            |
| 35561 08       | 35511 08       | 35511 99 pt                         | 35593 03       | 35593 31       | 35593 31       | 35599 15       | 35599 15       | 35595 41 pt<br>35595 98 pt  | 35645 46<br>35645 47 | 35645 46<br>35645 47 | 35645 49                            |
| 35561 09       | 35511 09       | 35511 41 pt                         | 35593 05       | 35593 32       | 35593 32       | 35599 17       | 35599 17       | 35595 41 pt<br>35595 98 pt  | 35646 10<br>35646 20 | 35646 10<br>35646 20 | 35646 00                            |
| 35561 11       | 35511 11       | 35511 99 pt                         | 35593 07       | 35593 34       | 35593 34       | 35599 19       | 35599 19       | 35595 41 pt<br>35595 98 pt  | 35651 01             | 35514 15<br>35691 15 | 35514 15<br>35691 15                |
| 35561 19       | 35511 19       | 35511 21                            | 35593 09       | 35593 35       | 35593 35       | 35599 22       | 35599 22       | 35595 41 pt<br>35595 98 pt  | 35651 02             | 35514 22<br>35691 22 | 35514 22<br>35691 22                |
| 35561 21       | 35511 21       | 35512 11                            | 35593 11       | 35593 52       | 35593 52       | 35599 25       | 35599 25       | 35595 41 pt<br>35595 98 pt  | 35651 03             | 35514 26<br>35691 26 | 35514 26<br>35691 26                |
| 35562 21       | 35512 21       | 35512 21                            | 35593 13       | 35593 53       | 35593 53       | 35599 27       | 35599 27       | 35595 41 pt   | 35651 04             | 35514 29<br>35691 29 | 35514 29<br>35691 29                |
| 35562 31       | 35512 31       | 35512 31                            | 35593 15       | 35593 61       | 35593 61       | 35599 29       | 35599 29       | 35595 41 pt   | 35651 05             | 35514 30<br>35691 30 | 35514 30<br>35691 30                |
| 35562 41       | 35512 41       | 35512 41                            | 35593 17       | 35593 71       | 35593 71       | 35599 31       | 35599 31       | 35595 45  | 35651 06             | 35514 32<br>35691 32 | 35514 32<br>35691 32                |
| 35562 51       | 35512 51       | 35512 51                            | 35593 19       | 35593 72       | 35593 72       | 35599 33       | 35599 33       | 35595 45  | 35651 07             | 35514 33<br>35691 33 | 35514 33<br>35691 33                |
| 35562 65       | 35512 65       | 35512 61<br>35512 92 pt             | 35593 21       | 35593 21       | 35593 79       | 35599 35       | 35599 35       | 35595 49  | 35651 08             | 35514 35<br>35691 35 | 35514 35<br>35691 35                |
| 35562 71       | 35512 71       | 35512 71                            | 35593 23       | 35593 23       | 35593 25       | 35599 37       | 35599 37       | 35595 49  | 35651 09             | 35514 41<br>35691 41 | 35514 41<br>35691 41                |
| 35562 75       | 35512 75       | 35512 75                            | 35593 27       | 35593 27       | 35593 81       | 35599 47       | 35599 47       | 35595 85 pt   | 35651 10             | 35514 52<br>35691 52 | 35514 52<br>35691 52                |
| 35562 85       | 35512 85       | 35512 92 pt                         | 35593 28       | 35593 28       | 35593 29       | 35599 49       | 35599 49       | 35595 98 pt   | 35651 11             | 35514 53<br>35691 53 | 35514 53<br>35691 53                |
| 35562 91       | 35512 91       | 35512 87<br>35512 92 pt             | 35594 01       | 35594 11       | 35594 11       | 35599 43       | 35599 43       | 35595 52  | 35651 12             | 35514 53<br>35691 53 | 35514 53<br>35691 53                |
| 35563 01       | 35513 01       | 35513 59 pt                         | 35594 03       | 35594 31       | 35594 31       | 35599 45       | 35599 45       | 35595 52  | 35651 13             | 35514 54<br>35691 54 | 35514 54<br>35691 54                |
| 35563 02       | 35513 02       | 35513 39                            | 35594 05       | 35594 51       | 35594 51       | 35599 47       | 35599 47       | 35595 85 pt   | 35651 14             | 35514 55<br>35691 55 | 35514 55<br>35691 55                |
| 35563 03       | 35513 03       | 35513 59 pt                         | 35594 07       | 35594 71       | 35594 71       | 35599 49       | 35599 49       | 35595 98 pt   | 35651 15             | 35514 63<br>35691 63 | 35514 63<br>35691 63                |
| 35563 04       | 35513 04       | 35513 49                            | 35594 09       | 35594 09       | 35594 79       | 35599 51       | 35599 51       | 35595 73  | 35651 16             | 35514 71<br>35691 71 | 35514 71<br>35691 71                |
| 35563 05       | 35513 05       | 35513 23 pt<br>35513 59 pt          | 35594 15       | 35594 15       | 35594 17       | 35599 53       | 35599 53       | 35595 73  | 35651 17             | 35514 81<br>35691 81 | 35514 81<br>35691 81                |
| 35563 06       | 35513 06       | 35513 52<br>35513 59 pt             | 35594 17       | 35594 17       | 35594 81       | 35599 55       | 35599 55       | 35595 92  | 35651 18             | 35514 82<br>35691 82 | 35514 82<br>35691 82                |
| 35563 07       | 35513 07       | 35513 59 pt                         | 35594 19       | 35594 19       | 35594 21       | 35599 57       | 35599 57       | 35595 92  | 35651 19             | 35514 83<br>35691 83 | 35514 83<br>35691 83                |
| 35563 08       | 35513 08       | 35513 49                            | 35594 21       | 35594 21       | 35595 95       | 35599 61       | 35599 61       | 35595 96  | 35651 20             | 35514 84<br>35691 84 | 35514 84<br>35691 84                |
| 35563 09       | 35513 09       | 35513 59 pt                         | 35596 03       | 35596 03       | 35596 05       | 35599 65       | 35599 65       | 35595 82 pt   | 35651 21             | 35514 84<br>35691 84 | 35514 84<br>35691 84                |
| 35563 11       | 35513 11       | 35513 13                            | 35596 05       | 35596 05       | 35596 11       | 35599 67       | 35599 67       | 35595 86 pt   | 35651 22             | 35514 11<br>35691 85 | 35513 67<br>35691 84 pt             |
| 35563 12       | 35513 12       | 35513 23 pt<br>35513 59 pt          | 35596 07       | 35596 07       | 35596 11       | 35599 69       | 35599 69       | 35595 83 pt<br>35595 84 pt  | 35651 23             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35563 14       | 35513 14       | 35513 59 pt                         | 35596 09       | 35596 09       | 35596 13       | 35599 71       | 35599 71       | 35595 82 pt<br>35595 83 pt<br>35595 84 pt<br>35595 85 pt<br>35595 86 pt | 35651 24             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35563 15       | 35513 15       | 35513 29<br>35513 59 pt             | 35596 11       | 35596 11       | 35596 15       | 35599 73       | 35599 73       | 35595 87  | 35651 25             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35563 21       | 35513 21       | 35513 83 pt                         | 35596 13       | 35596 13       | 35596 17       | 35599 75       | 35599 75       | 35595 94  | 35651 26             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35591 01       | 35591 01       | 35591 00 pt                         | 35596 15       | 35596 15       | 35596 19       | 35599 77       | 35599 77       | 35595 94  | 35651 27             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35591 03       | 35591 03       | 35591 05                            | 35596 17       | 35596 17       | 35596 21       | 35599 80       | 35599 80       | 35595 98 pt   | 35651 28             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35591 07       | 35591 07       | 35591 00 pt                         | 35596 19       | 35596 19       | 35596 21       | 35599 82       | 35599 82       | 35595 62 pt   | 35651 29             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35591 09       | 35591 09       | 35591 00 pt                         | 35596 21       | 35596 21       | 35596 25       | 35599 85       | 35599 85       | 35595 62 pt<br>35595 63 pt  | 35651 30             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35591 11       | 35591 11       | 35591 11                            | 35596 23       | 35596 23       | 35596 27       | 35599 88       | 35599 88       | 36362 74  | 35651 31             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35591 13       | 35591 13       | 35591 00 pt                         | 35596 25       | 35596 25       | 35596 29       | 35599 89       | 35599 89       | 36362 75  | 35651 32             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35591 15       | 35591 15       | 35591 00 pt                         | 35596 27       | 35596 27       | 35596 31       | 35599 90       | 35599 90       | 36362 85  | 35651 33             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 01       | 35592 21       | 35592 21                            | 35596 29       | 35596 29       | 35596 33       | 35599 92       | 35599 92       | 35595 98 pt   | 35651 34             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 03       | 35592 33       | 35592 33                            | 35596 31       | 35596 31       | 35596 35       | 35599 93       | 35599 93       | 35595 98 pt   | 35651 35             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 05       | 35592 35       | 35592 35                            | 35596 33       | 35596 33       | 35596 37       | 35599 94       | 35599 94       | 35595 98 pt   | 35651 36             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 07       | 35592 54       | 35592 54                            | 35596 35       | 35596 35       | 35596 39       | 35599 95       | 35599 95       | 35595 98 pt   | 35651 37             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 09       | 35592 09       | 35592 98 pt                         | 35596 37       | 35596 37       | 35596 41       | 35599 96       | 35599 96       | 35595 98 pt   | 35651 38             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 11       | 35592 11       | 35592 11                            | 35596 39       | 35596 39       | 35596 43       | 35599 97       | 35599 97       | 35595 98 pt   | 35651 39             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 15       | 35592 15       | 35592 41<br>35592 42<br>35592 98 pt | 35596 41       | 35596 41       | 35596 45       | 35599 98       | 35599 98       | 35595 98 pt   | 35651 40             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
| 35592 19       | 35592 97       | 35592 97                            | 35596 43       | 35596 43       | 35596 47       | 35599 99       | 35599 99       | 35595 98 pt   | 35651 41             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 45       | 35596 45       | 35596 49       | 35599 100      | 35599 100      | 35595 98 pt   | 35651 42             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 47       | 35596 47       | 35596 51       | 35599 101      | 35599 101      | 35595 98 pt   | 35651 43             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 49       | 35596 49       | 35596 53       | 35599 102      | 35599 102      | 35595 98 pt   | 35651 44             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 51       | 35596 51       | 35596 55       | 35599 103      | 35599 103      | 35595 98 pt   | 35651 45             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 53       | 35596 53       | 35596 57       | 35599 104      | 35599 104      | 35595 98 pt   | 35651 46             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 55       | 35596 55       | 35596 59       | 35599 105      | 35599 105      | 35595 98 pt   | 35651 47             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 57       | 35596 57       | 35596 61       | 35599 106      | 35599 106      | 35595 98 pt   | 35651 48             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 59       | 35596 59       | 35596 63       | 35599 107      | 35599 107      | 35595 98 pt   | 35651 49             | 35514 91<br>35691 91 | 35513 83 pt<br>35514 91<br>35691 91 |
|                |                |                                     | 35596 61       | 35596 61       | 35596 65       | 35599 108      | 35599 108      | 35595 98 pt   | 35651 50             | 35514 91<br>35691 91 | 35513                               |

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|----------------|----------------|---|----------------|----------------------|--|----------------------|----------------------|----------------------|--|--|-------------------------|
| 35676 02       | 35676 02       | 35672 21                                  | 35751 00       | 35732 40<br>36612 10 | 35732 00 pt<br>36612 00 pt   | 35892 98             | 35892 98             | 35892 89 pt          | 35963 03   | 35763 03   | 35760 62                |
| 35676 03       | 35676 03       | 35672 61                                  | 35752 00       | 35733 40             | 35734 30 pt<br>35735 51 pt   | 35892 99             | 35892 99             | 35892 93 pt          | 35963 05   | 35763 05   | 35760 63                |
| 35676 04       | 35676 04       | 35672 00 pt                               | 35771 00       | 35732 30<br>35732 61 | 35732 00 pt  | 35893 01<br>35893 02 | 35893 01<br>35893 02 | 35893 11             | 35963 09   | 35763 09   | 35760 84                |
| 35676 05       | 35676 05       | 35672 41 pt                               | 35772 00       | 35733 30             | 35734 30 pt<br>35735 51 pt   | 35893 08<br>35893 09 | 35893 08<br>35893 09 | 35893 98             | 36122 02<br>36122 04<br>36122 06<br>36122 14<br>36122 16<br>36122 19<br>36122 21<br>36122 23<br>36122 28<br>36122 29 | 36122 02<br>36122 04<br>36122 06<br>36122 14<br>36122 16<br>36122 19<br>36122 21<br>36122 23<br>36122 28<br>36122 29 | 36122 00                |
| 35676 06       | 35676 06       | 35672 00 pt                               | 35781 00       | 35743 00             | 35743 00   | 35921 01             | 35921 01             | 35921 11             | 35921 02   | 35921 02   | 35921 13                |
| 35676 17       | 35676 17       | 35672 41 pt                               | 35782 00       | 35744 00             | 35744 00   | 35921 03             | 35921 03             | 35921 71             | 35921 05   | 35921 05   | 35921 72                |
| 35676 19       | 35676 19       |   | 35783 00       | 35745 00             | 35745 10<br>35745 31   | 35922 01             | 35922 01             | 35922 21             | 35922 02   | 35922 02   | 35922 23                |
| 35681 11       | 35681 11       | 35681 15                                  | 3579A 00       | 3579A 00             | 3579A 20<br>3579A 40<br>3579A 41<br>3579A 44<br>3579A 50<br>3579A 55 | 35922 03             | 35922 03             | 35922 51             | 35922 04   | 35922 04   | 35922 53                |
| 35681 13       | 35681 13       |   | 35820 35       | 35820 35             | 35820 24   | 35922 05             | 35922 05             | 35922 55             | 35922 06   | 35922 06   | 35922 57                |
| 35683 36       | 35683 36       | 35683 99 pt                               | 35820 36       | 35820 36             |  | 35922 07             | 35922 07             |                      | 35922 08   | 35922 08   |                         |
| 35683 93       | 35683 93       |   | 35856 00       | 35856 00             | 35856 11<br>35856 30   | 35922 09             | 35922 09             | 35922 59             | 35922 10   | 35922 10   | 35922 61                |
| 35683 95       | 35683 95       |   | 35859 05       | 35859 05             | 35859 09   | 35923 01             | 35923 01             | 35923 61             | 35923 11   | 35923 11   | 36125 00 pt             |
| 35683 97       | 35683 97       |   | 35859 07       | 35859 07             |  | 35923 02             | 35923 02             | 35923 63             | 35923 12   | 35923 12   |                         |
| 35693 04       | 35693 04       | 35693 01 pt<br>35693 02 pt<br>35693 03 pt | 3585C 00       | 3585A 10             | 3585A 10<br>3585A 20<br>3585A 20                                     | 35923 03             | 35923 03             | 35923 65             | 35923 13   | 35923 13   |                         |
| 35693 05       | 35693 05       | 35693 01 pt<br>35693 02 pt<br>35693 03 pt | 35856 00       | 35856 00             | 35856 11<br>35856 30   | 35923 04             | 35923 04             | 35923 66             | 35923 14   | 35923 14   |                         |
| 35693 06       | 35693 06       | 35693 01 pt<br>35693 02 pt<br>35693 03 pt | 35859 05       | 35859 05             | 35859 09   | 35923 05             | 35923 05             | 35923 67             | 35923 15   | 35923 15   |                         |
| 35697 00       | 35697 00       | 35699 97 pt                               | 35859 07       | 35859 07             |  | 35923 06             | 35923 06             | 35923 68             | 35923 16   | 35923 16   |                         |
| 35698 01       | 35698 01       | 35699 31                                  | 3585D 10       | 3585B 10             | 3585B 10   | 35932 00             | 35998 00             | 35998 00             | 36127 11   | 36127 11   | 36127 00                |
| 35698 02       | 35698 02       |   | 3585D 20       | 3585B 20             | 3585B 20   | 35933 00             | 35999 00             | 35999 00             | 36127 31   | 36127 31   |                         |
| 35698 03       | 35698 03       | 35699 32                                  | 3585D 30       | 3585B 30             | 3585B 30   | 35941 10             | 35619 00             | 35617 00<br>35618 00 | 36249 94<br>36249 96   | 36249 94<br>36249 96   | 36249 98                |
| 35698 04       | 35698 04       |   | 3585D 40       | 3585B 40             | 3585B 40   | 35941 20             | 35631 50             | 35631 40 pt          | 36251 00   | 36138 10   | 36138 00 pt             |
| 35698 05       | 35698 05       | 35699 33                                  | 3585D 50       | 3585B 50             | 3585B 50   | 35942 10             | 3561D 00             | 3561A 00<br>3561B 00 | 36252 00   | 36221 00   | 36221 00                |
| 35698 06       | 35698 06       |   | 3585D 60       | 3585B 60             | 3585B 60   | 35942 20             | 35631 60             | 35631 40 pt          | 36253 00   | 36222 00   | 36222 00                |
| 35698 07       | 35698 07       | 35699 35                                  | 3585D 70       | 3585B 70             | 3585B 70   | 35961 01             | 35761 01             | 35760 13             | 36254 00   | 36138 20   | 36138 00 pt             |
| 35698 08       | 35698 08       |   | 3585D 80       | 3585B 72             | 3585B 72<br>36994 07   | 35961 03             | 35761 03             | 35760 15             | 36291 01   | 36291 11   | 36291 11                |
| 35698 11       | 35698 11       | 35699 36                                  | 35860 89       | 35860 89             | 35860 21<br>35860 41<br>35860 88                                     | 35961 05             | 35761 05             | 35760 21             | 36291 03   | 36291 31   | 36291 31                |
| 35698 12       | 35698 12       |   | 35892 03       | 35892 03             | 35892 01 pt  | 35961 07             | 35761 07             | 35760 23             | 36291 05   | 36291 05   | 36291 35<br>36291 98 pt |
| 35698 13       | 35698 13       | 35699 41                                  | 35892 04       | 35892 04             | 35892 02 pt  | 35961 09             | 35761 09             | 35760 24             | 36291 09   | 36291 09   | 36291 98 pt             |
| 35698 14       | 35698 14       |   | 35892 05       | 35892 05             |  | 35961 11             | 35761 11             | 35760 26             | 36293 01   | 36293 01   | 36293 13<br>36293 15    |
| 35698 15       | 35698 15       | 35699 43                                  | 35892 06       | 35892 06             | 35892 01 pt<br>35892 02 pt   | 35961 13             | 35761 13             | 35760 28             | 36293 02   | 36293 31   | 36293 31                |
| 35698 16       | 35698 16       |   | 35892 07       | 35892 07             | 35892 93 pt  | 35961 15             | 35761 15             | 35760 22             | 36293 03   | 36293 03   |                         |
| 35698 17       | 35698 17       | 35699 45                                  | 35892 08       | 35892 08             | 35892 02 pt  | 35961 17             | 35761 17             | 35760 30             | 36293 04   | 36293 04   | 36293 99                |
| 35698 18       | 35698 18       |   | 35892 09       | 35892 09             |  | 35961 19             | 35762 01             | 35760 32             | 36293 05   | 36293 05   | 36293 99                |
| 35698 21       | 35698 21       | 35699 51                                  | 35892 10       | 35892 10             | 35892 01 pt<br>35892 02 pt   | 35962 03             | 35762 03             | 35760 33             | 36293 09   | 36293 09   |                         |
| 35698 22       | 35698 22       |   | 35892 11       | 35892 11             |  | 35962 05             | 35762 05             | 35760 36             | 36293 10   | 36293 10   |                         |
| 35698 23       | 35698 23       | 35699 61                                  | 35892 12       | 35892 12             |  | 35962 07             | 35762 07             | 35760 37 pt          | 36313 10   | 36313 10   | 36313 00                |
| 35698 24       | 35698 24       |   | 35892 13       | 35892 13             |  | 35962 09             | 35762 09             | 35760 41             | 36314 10   | 36314 10   | 36314 00                |
| 35698 25       | 35698 25       | 35699 71                                  | 35892 14       | 35892 14             | 35892 89 pt  | 35962 11             | 35762 11             | 35760 45             | 36330 10   | 36330 10   |                         |
| 35698 26       | 35698 26       |   | 35892 15       | 35892 15             | 35892 93 pt  | 35962 13             | 35762 13             | 35760 52             | 36330 11   | 36330 11   |                         |
| 35698 27       | 35698 27       | 35699 73                                  | 35892 16       | 35892 16             |  | 35962 15             | 35762 15             | 35760 53             | 36333 15   | 36333 15   |                         |
| 35698 28       | 35698 28       |   | 35892 17       | 35892 17             | 35892 93 pt  | 35962 17             | 35762 17             | 35760 57 pt          | 36333 71   | 36333 71   |                         |
| 35698 31       | 35698 31       | 35699 74                                  | 35892 18       | 35892 18             | 35892 93 pt  | 35962 19             | 35762 19             | 35760 61             | 36349 20   | 36349 20   | 36349 95                |
| 35698 32       | 35698 32       |   | 35892 19       | 35892 19             |  | 35963 01             | 35763 01             | 35760 61             | 36349 21   | 36349 21   | 36349 99                |
| 35698 35       | 35698 35       | 35699 97 pt                               | 35892 20       | 35892 20             | 35892 89 pt  |                      |                      |                      |  |  |                         |
| 35698 36       | 35698 36       |   | 35892 21       | 35892 21             |  |                      |                      |                      |  |  |                         |
| 35698 48       | 35698 48       |   | 35892 22       | 35892 22             | 35892 25<br>35892 28   |                      |                      |                      |  |  |                         |
| 35698 49       | 35698 49       |   | 35892 23       | 35892 23             |  |                      |                      |                      |  |  |                         |
| 35711 00       | 35731 00       | 35731 00                                  | 35892 24       | 35892 24             | 35892 89 pt  |                      |                      |                      |  |  |                         |
|                | 36629 43       | 36629 00 pt                               | 35892 25       | 35892 25             | 35892 84   |                      |                      |                      |  |  |                         |
| 35712 00       | 35733 05       | 35734 20                                  | 35892 26       | 35892 26             | 35892 84   |                      |                      |                      |  |  |                         |
|                | 35735 41       |   | 35892 27       | 35892 27             | 35892 93 pt  |                      |                      |                      |  |  |                         |
| 35721 00       | 35732 10       | 35732 00 pt                               | 35892 28       | 35892 28             | 35892 93 pt  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 29       | 35892 29             | 35892 86   |                      |                      |                      |  |  |                         |
| 35722 00       | 35733 10       | 35734 30 pt                               | 35892 30       | 35892 30             | 35892 86   |                      |                      |                      |  |  |                         |
|                |                | 35735 51 pt                               | 35892 31       | 35892 31             | 35892 88   |                      |                      |                      |  |  |                         |
|                |                |   | 35892 32       | 35892 32             | 35892 88 pt  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 33       | 35892 33             | 35892 91   |                      |                      |                      |  |  |                         |
|                |                |   | 35892 34       | 35892 34             | 35892 91 pt  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 35       | 35892 35             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 36       | 35892 36             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 37       | 35892 37             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 38       | 35892 38             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 39       | 35892 39             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 40       | 35892 40             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 41       | 35892 41             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 42       | 35892 42             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 43       | 35892 43             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 44       | 35892 44             | 35892 89 pt  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 45       | 35892 45             | 35892 93 pt  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 46       | 35892 46             | 35892 76   |                      |                      |                      |  |  |                         |
|                |                |   | 35892 47       | 35892 47             | 35892 84   |                      |                      |                      |  |  |                         |
|                |                |   | 35892 48       | 35892 48             | 35892 88   |                      |                      |                      |  |  |                         |
|                |                |   | 35892 49       | 35892 49             | 35892 91   |                      |                      |                      |  |  |                         |
|                |                |   | 35892 50       | 35892 50             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 51       | 35892 51             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 52       | 35892 52             |  |                      |                      |                      |  |  |                         |
|                |                |   | 35892 53       | 35892 53             |  |                      |                      |                      |  |  |                         |

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| 1987 published | 1987 collected       | 1982 published                                  | 1987 published       | 1987 collected       | 1982 published   | 1987 published    | 1987 collected    | 1982 published   | 1987 published | 1987 collected | 1982 published          |
|----------------|----------------------|---|----------------------|----------------------|--|-------------------|-------------------|--|----------------|----------------|-------------------------|
| 36395 10       | 36361 21<br>36395 30 | 36361 21<br>36394 00 pt<br>36399 60             | 36920 05—<br>Con.    | 36920 05—<br>Con.    | 36920 10 pt<br>—Con.<br>36920 82 pt<br>36920 92 pt       | 37112 02—<br>Con. | 37112 02—<br>Con. | 37112 23 pt<br>—Con.<br>37112 26 pt  | 37131 07       | 37131 07       | 37131 60 pt             |
| 36395 20       | 36361 84<br>36395 40 | 36361 84<br>36394 00 pt<br>36399 91<br>36399 93 | 36920 07             | 36920 07             | 36920 10 pt<br>36920 70 pt<br>36920 82 pt<br>36920 92 pt | 37112 03          | 37112 03          | 37112 11 pt<br>37112 13 pt   | 37131 11       | 37131 40       | 37131 40                |
| 36411 00       | 36410 10             | 36410 20<br>36410 55<br>36410 63                | 36920 09             | 36920 09             | 36920 95   | 37112 04          | 37112 04          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 13       | 37131 13       | 37131 42<br>37131 46    |
| 36412 00       | 36994 22             | 36994 11<br>36994 21                            | 36941 01             | 36941 01             | 36941 11   | 37112 05          | 37112 05          | 37112 11 pt<br>37112 13 pt   | 37131 15       | 37131 48       | 37131 48                |
| 36489 12       | 36489 12             | 36489 11 pt<br>36489 19 pt                      | 36941 03             | 36941 03             | 36941 31   | 37112 06          | 37112 06          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt<br>37112 17 pt<br>37112 21 pt<br>37112 23 pt<br>37112 25 pt<br>37112 26 pt | 37131 16       | 37131 50       | 37131 50                |
| 36489 16       | 36489 16             | 36489 11 pt                                     | 36941 04             | 36941 04             | 36941 35   | 37112 07          | 37112 07          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 17       | 37131 52       | 37131 52                |
| 36489 17       | 36489 17             | 36489 19 pt                                     | 36942 01             | 36942 01             | 36942 14<br>36942 28 pt                                  | 37112 08          | 37112 08          | 37112 23 pt<br>37112 25 pt<br>37112 26 pt  | 37131 21       | 37131 37       | 37131 37                |
| 36520 00       | 36520 00             | 36521 00<br>36521 19                            | 36942 02             | 36942 02             | 36942 28 pt  | 37112 09          | 37112 09          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 43       | 37131 30       | 37131 30                |
| 36520 01       | 36520 01             | 36521 01 pt<br>36521 02 pt                      | 36942 03             | 36942 03             | 36942 27<br>36942 28 pt                                  | 37112 10          | 37112 10          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 49       | 37131 49       | 37131 12 pt<br>37131 25 |
| 36520 03       | 36520 03             | 36521 01 pt<br>36521 02 pt                      | 36942 04             | 36942 04             | 36942 37<br>36942 41<br>36942 42                         | 37112 11          | 37112 11          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 53       | 37131 33       | 37131 33                |
| 36520 05       | 36520 05             | 36521 03<br>36521 04                            | 36943 01             | 36943 01             | 36943 11<br>36943 42 pt                                  | 37112 12          | 37112 12          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 55       | 37131 34       | 37131 34                |
| 36520 07       | 36520 07             | 36521 05  | 36943 02             | 36943 02             | 36943 42 pt  | 37112 13          | 37112 13          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 57       | 37131 54       | 37131 54                |
| 36520 09       | 36520 09             |   | 36943 03             | 36943 03             | 36943 41<br>36943 42 pt                                  | 37112 14          | 37112 14          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 61       | 37131 36       | 37131 36                |
| 36520 11       | 36520 11             | 36521 12<br>36521 15                            | 36943 04             | 36943 04             | 36943 41<br>36943 42 pt                                  | 37112 15          | 37112 15          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 62       | 37131 38       | 37131 38                |
| 36520 19       | 36520 19             | 36521 11<br>36521 13<br>36521 14<br>36521 16    | 36947 04<br>36947 05 | 36947 04<br>36947 05 | 36947 03   | 37112 16          | 37112 16          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 63       | 37131 56       | 37131 56                |
| 36613 00       | 35732 50<br>36612 20 | 35732 00 pt<br>36612 00 pt                      | 36949 07             | 36949 07             | 36949 09 pt  | 37112 17          | 37112 17          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37131 69       | 37131 69       | 37131 60 pt             |
| 36614 00       | 36612 40             | 36612 00 pt                                     | 36949 11             | 36949 11             | 36949 02   | 37112 18          | 37112 18          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 01       | 37132 79       | 37132 79                |
| 36631 00       | 36621 00             | 36621 00<br>36629 41                            | 36949 12             | 36949 12             | 36949 03   | 37112 19          | 37112 19          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 02       | 37132 02       | 37132 71<br>37132 75    |
| 36632 00       | 36622 00             | 36622 00  | 36949 13             | 36949 13             | 36949 05<br>36949 06                                     | 37112 20          | 37112 20          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 03       | 37132 03       | 37132 98 pt             |
| 36691 00       | 36624 00             | 36624 00  | 36949 14             | 36949 14             | 36949 09 pt  | 37112 21          | 37112 21          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 05       | 37132 05       |                         |
| 36692 00       | 36626 00             | 36626 00  | 36949 15             | 36949 15             | 36949 09 pt  | 37112 22          | 37112 22          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 06       | 37132 06       |                         |
| 36693 00       | 36628 00             | 36628 00  | 36949 16             | 36949 16             | 36949 09 pt  | 37112 23          | 37112 23          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 07       | 37132 07       |                         |
| 36714 00       | 36714 00             | 36711 00<br>36712 00                            | 36949 17             | 36949 17             | 36949 09 pt  | 37112 24          | 37112 24          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 08       | 37132 08       |                         |
| 36715 00       | 36799 10             | 36799 00 pt                                     | 36949 18             | 36949 18             | 36949 09 pt  | 37112 25          | 37112 25          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 09       | 37132 09       |                         |
| 36720 00       | 36797 00             | 36797 00  | 36949 19             | 36949 19             | 36949 09 pt  | 37112 26          | 37112 26          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 10       | 37132 10       |                         |
| 36799 20       | 36799 20             | 36629 00 pt<br>36629 42                         | 36949 20             | 36949 20             | 36629 00 pt  | 37112 27          | 37112 27          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 26       | 37132 26       | 37132 98 pt             |
| 36799 30       | 36799 30             | 36799 00 pt                                     | 36949 21             | 36949 21             | 36799 00 pt  | 37112 28          | 37112 28          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 27       | 37132 27       |                         |
| 36913 17       | 36913 17             | 36913 15<br>36913 16                            | 36949 22             | 36949 22             | 36949 06 pt  | 37112 29          | 37112 29          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 28       | 37132 28       |                         |
| 36914 25       | 36914 25             | 36914 21<br>36914 29                            | 36949 23             | 36949 23             | 36949 06 pt  | 37112 30          | 37112 30          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 29       | 37132 29       |                         |
| 36915 01       | 36915 01             | 36915 72<br>36915 75                            | 36949 24             | 36949 24             | 36949 06 pt  | 37112 31          | 37112 31          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 31       | 37132 31       |                         |
| 36915 02       | 36915 02             | 36915 85  | 36949 25             | 36949 25             | 36949 06 pt  | 37112 32          | 37112 32          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 32       | 37132 32       |                         |
| 36920 01       | 36920 01             | 36920 10 pt<br>36920 70 pt<br>36920 82 pt       | 36949 26             | 36949 26             | 36949 06 pt  | 37112 33          | 37112 33          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 33       | 37132 33       |                         |
| 36920 03       | 36920 03             | 36920 70 pt<br>36920 82 pt                      | 36949 27             | 36949 27             | 36949 06 pt  | 37112 34          | 37112 34          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 34       | 37132 34       |                         |
| 36920 04       | 36920 04             | 36920 70 pt<br>36920 82 pt                      | 36949 28             | 36949 28             | 36949 06 pt  | 37112 35          | 37112 35          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 35       | 37132 35       |                         |
| 36920 05       | 36920 05             | 36920 10 pt<br>36920 70 pt                      | 37112 01             | 37112 01             | 37112 01   | 37112 36          | 37112 36          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 36       | 37132 36       |                         |
|                |                      |   | 37112 02             | 37112 02             | 37112 02   | 37112 37          | 37112 37          | 37112 11 pt<br>37112 13 pt<br>37112 15 pt  | 37132 37       | 37132 37       |                         |

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|----------------|----------------|---|----------------|----------------|--|----------------|----------------|----------------------------------|----------------|----------------|---|
| 3714A 01       | 3714A 01       | 37143 31  | 37322 21—Con.  | 37322 21—Con.  | 37322 40—Con.  | 37433 03       | 37433 62       | 37433 62                         | 38121 00       | 38111 00       | 38111 00                                  |
| 3714A 02       | 3714A 02       | 37143 21  |                |                | 37322 49   | 37433 04       | 37433 69       | 37433 69                         | 38122 00       | 36625 30       | 36625 00 pt                               |
| 3714A 03       | 3714A 03       | 37143 23  | 37322 23       | 37322 23       | 37322 47   | 37433 11       | 37433 71       | 37433 71                         | 38210 10       | 38112 00       | 38112 00                                  |
| 3714A 04       | 3714A 04       | 37143 26  | 37322 25       | 37322 25       | 37322 48   | 37433 12       | 37433 12       | 37433 79                         | 38210 20       | 38113 20       | 38113 00 pt                               |
| 3714A 05       | 3714A 05       | 37143 49 pt                                     | 37322 27       | 37322 27       | 37322 55 pt  | 37433 13       | 37433 13       |                                  | 38244 00       | 38244 00       | 38244 11                                  |
| 3714A 06       | 3714A 06       |   | 37322 28       | 37322 28       |  | 37433 14       | 37433 14       |                                  |                |                | 38244 21                                  |
| 3714A 07       | 3714A 07       | 37143 44  | 37322 29       | 37322 29       | 37322 53<br>37322 55 pt<br>37322 61                      | 37511 01       | 37511 11       | 37511 11                         |                |                | 38244 31                                  |
| 3714A 08       | 3714A 08       | 37143 49 pt                                     |                |                |  | 37511 02       | 37511 21       | 37511 21                         | 38260 00       | 38326 00       | 38326 00                                  |
| 3714A 09       | 3714A 09       | 37143 46  | 37323 03       | 37323 03       | 37323 11 pt<br>37323 30                                  | 37511 03       | 37511 31       | 37511 31                         | 38271 00       | 38324 00       | 38324 00                                  |
| 3714A 10       | 3714A 10       | 37143 47  | 37323 05       | 37323 05       | 37323 11 pt<br>37323 35                                  | 37511 04       | 37511 42       | 37511 42                         | 38272 00       | 38325 30       | 38325 00                                  |
| 3714A 11       | 3714A 11       | 37143 48  |                |                |  | 37511 05       | 37511 44       | 37511 44                         | 38273 00       | 38325 40       |   |
| 3714A 12       | 3714A 12       | 37143 49 pt                                     | 37323 07       | 37323 07       | 37323 11 pt<br>37323 50                                  | 37511 06       | 37511 51       | 37511 51                         |                |                | 38295 10                                  |
| 3714A 13       | 3714A 13       |   |                |                |  | 37511 09       | 37511 59       | 37511 59                         |                |                | 38295 20                                  |
| 3714A 19       | 3714A 19       |   | 37323 09       | 37323 09       | 37323 11 pt<br>37323 54                                  | 37511 10       | 37511 10       | 37511 71                         |                |                | 38296 00                                  |
| 37151 00       | 37151 00       | 37151 10<br>37151 50                            | 37323 13       | 37323 13       | 37323 11 pt<br>37323 56                                  | 37511 12       | 37511 12       |                                  | 38411 42       | 38411 42       | 38411 41                                  |
| 37152 01       | 37152 01       | 37152 00  | 37323 15       | 37323 15       | 37323 11 pt<br>37323 58                                  | 37511 13       | 37511 13       |                                  |                |                | 38411 45                                  |
| 37152 02       | 37152 02       |   |                |                |  | 37511 14       | 37511 14       |                                  |                |                | 38411 46                                  |
| 37211 00       | 37211 00       | 37211 21<br>37211 23<br>37211 28                | 37323 17       | 37323 17       | 37323 11 pt<br>37323 70<br>37323 75                      | 37511 15       | 37511 15       |                                  |                |                |   |
| 37244 01       | 37244 01       | 37244 13  | 37323 19       | 37323 19       | 37323 00 pt  | 37511 16       | 37511 16       |                                  | 38411 72       | 38411 72       | 38411 71 pt                               |
| 37244 02       | 37244 02       |   | 37324 01       | 37324 01       | 37324 10<br>37324 15                                     | 37511 17       |                |                                  |                |                |   |
| 37244 05       | 37244 05       | 37244 53  | 37324 03       | 37324 03       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37512 01       | 37512 01       | 37512 14<br>37512 17             | 38411 85       | 38411 85       | 38411 82<br>38411 83                      |
| 37244 06       | 37244 06       |   |                |                |  | 37512 06       | 37512 06       | 37512 53                         | 38411 87       | 38411 87       | 38411 84 pt                               |
| 37311 01       | 37311 01       | 37311 11 pt<br>37311 21                         | 37324 05       | 37324 05       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37512 07       | 37512 07       |                                  |                |                | 38411 97                                  |
| 37311 02       | 37311 02       | 37311 11 pt<br>37311 31                         |                |                |  | 37612 01       | 37612 25       | 37612 25                         | 38411 97       | 38411 97       | 38411 98 pt                               |
| 37311 03       | 37311 03       | 37311 11 pt<br>37311 41                         | 37324 07       | 37324 07       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37612 02       | 37612 02       | 37612 35<br>37612 45             | 38411 99       | 38411 99       | 38411 71 pt<br>38411 84 pt<br>38411 98 pt |
| 37311 04       | 37311 04       | 37311 11 pt<br>37311 51                         | 37324 09       | 37324 09       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37614 01       | 37614 13       | 37614 13                         | 38421 01       | 38421 01       | 38421 99 pt                               |
| 37311 05       | 37311 05       | 37311 11 pt<br>37311 61                         |                |                |  | 37614 02       | 37614 02       | 37614 15<br>37614 17             | 38421 02       | 38421 02       | 38421 35 pt                               |
| 37311 06       | 37311 06       | 37311 81 pt                                     | 37324 05       | 37324 05       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37615 01       | 37615 11       | 37615 11                         | 38421 03       | 38421 03       | 38421 99 pt                               |
| 37311 07       | 37311 75       | 37311 75  | 37324 07       | 37324 07       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37615 02       | 37615 13       | 37615 13                         | 38421 04       | 38421 04       | 38421 11 pt                               |
| 37311 09       | 37311 09       | 37311 11 pt<br>37311 81 pt                      | 37324 09       | 37324 09       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37615 03       | 37615 03       | 37615 15<br>37615 23             | 38421 05       | 38421 41       | 38421 41                                  |
| 37313 21       | 37313 21       | 37313 98 pt                                     | 37324 09       | 37324 09       | 37324 18 pt<br>37324 20 pt<br>37324 25 pt                | 37615 03       | 37615 03       | 37615 15<br>37615 23             | 38421 06       | 38421 38       | 38421 38                                  |
| 37313 29       | 37313 29       | 37313 10<br>37313 12<br>37313 14<br>37313 98 pt | 37327 01       | 37327 01       | 37327 22<br>37327 25 pt<br>37327 32<br>37327 35 pt       | 37922 61       | 37922 61       | 37922 59                         | 38421 07       | 38421 71       | 38421 71                                  |
| 37316 01       | 37316 01       | 37316 13<br>37316 53                            | 37327 03       | 37327 03       | 37327 25 pt<br>37327 28 pt<br>37327 35 pt<br>37327 38 pt | 37922 63       | 37922 63       | 37922 59                         | 38421 08       | 38421 82       | 38421 82                                  |
| 37316 02       | 37316 02       | 37316 19<br>37316 59                            | 37327 05       | 37327 05       | 37327 28 pt<br>37327 38 pt                               | 37950 01       | 37950 01       | 37950 11<br>37950 15             | 38421 09       | 38421 81       | 38421 81                                  |
| 37322 01       | 37322 01       | 37322 03<br>37322 04<br>37322 06<br>37322 08    | 37327 07       | 37327 07       | 37327 28 pt<br>37327 38 pt                               | 37996 01       | 37996 30       | 37996 30                         | 38421 10       | 38421 45       | 38421 45                                  |
| 37322 02       | 37322 02       | 37322 11  | 37327 09       | 37327 09       | 37327 28 pt<br>37327 38 pt                               | 37996 02       | 37996 32       | 37996 32                         | 38421 12       | 38421 12       | 38421 99 pt                               |
| 37322 05       | 37322 05       | 37322 19 pt                                     | 37327 09       | 37327 09       | 37327 28 pt<br>37327 38 pt                               | 37996 03       | 37996 34       | 37996 34                         | 38421 37       | 38421 37       | 38421 33<br>38421 34                      |
| 37322 07       | 37322 07       |   | 37327 07       | 37327 07       | 37327 28 pt<br>37327 38 pt                               | 37996 04       | 37996 36       | 37996 36                         | 38421 91       | 38421 91       | 38421 99 pt                               |
| 37322 09       | 37322 09       | 37322 15  | 37327 09       | 37327 09       | 37327 28 pt<br>37327 38 pt                               | 37996 08       | 37996 08       | 37996 39                         | 38421 97       | 38421 97       | 38421 15<br>38421 99 pt                   |
| 37322 11       | 37322 11       | 37322 19 pt                                     | 37327 09       | 37327 09       | 37327 28 pt<br>37327 38 pt                               | 37996 09       | 37996 09       | 37996 09                         | 38421 99       | 38421 99       |   |
| 37322 13       | 37322 13       | 37322 17<br>37322 19 pt                         | 37327 11       | 37327 11       | 37327 41   | 37999 01       | 37999 01       | 37994 92                         |                |                |   |
| 37322 21       | 37322 21       | 37322 40<br>37322 42<br>37322 44                | 37327 13       | 37327 13       | 37327 13   | 37999 02       | 37999 02       | 37994 94                         | 38421 98       | 38421 98       | 38421 11 pt<br>38421 35 pt<br>38421 99 pt |
| 37322 22       | 37322 22       |   | 37327 15       | 37327 15       | 37327 15   | 37999 03       | 37999 03       | 37998 62                         |                |                |   |
| 37322 23       | 37322 23       |   | 37327 19       | 37327 19       | 37327 42<br>37327 49                                     | 37999 04       | 37999 04       | 37998 64                         | 38423 21       | 38423 21       | 38423 31                                  |
| 37322 24       | 37322 24       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         | 38423 22       | 38423 22       |   |
| 37322 25       | 37322 25       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38423 23       | 38423 23       |   |
| 37322 26       | 37322 26       |   |                |                |  | 37999 19       | 37999 19       | 37998 35<br>37998 51<br>37998 82 | 38423 24       | 38423 24       |   |
| 37322 27       | 37322 27       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         |                |                |   |
| 37322 28       | 37322 28       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38431 12       | 38431 12       |   |
| 37322 29       | 37322 29       |   |                |                |  | 37999 19       | 37999 19       | 37998 35<br>37998 51<br>37998 82 | 38431 13       | 38431 13       |   |
| 37322 30       | 37322 30       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         |                |                |   |
| 37322 31       | 37322 31       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38431 12       | 38431 12       |   |
| 37322 32       | 37322 32       |   |                |                |  | 37999 19       | 37999 19       | 37998 35<br>37998 51<br>37998 82 | 38431 13       | 38431 13       |   |
| 37322 33       | 37322 33       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         |                |                |   |
| 37322 34       | 37322 34       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38431 12       | 38431 12       |   |
| 37322 35       | 37322 35       |   |                |                |  | 37999 19       | 37999 19       | 37998 35<br>37998 51<br>37998 82 | 38431 13       | 38431 13       |   |
| 37322 36       | 37322 36       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         |                |                |   |
| 37322 37       | 37322 37       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38431 12       | 38431 12       |   |
| 37322 38       | 37322 38       |   |                |                |  | 37999 19       | 37999 19       | 37998 35<br>37998 51<br>37998 82 | 38431 13       | 38431 13       |   |
| 37322 39       | 37322 39       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         |                |                |   |
| 37322 40       | 37322 40       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38431 12       | 38431 12       |   |
| 37322 41       | 37322 41       |   |                |                |  | 37999 19       | 37999 19       | 37998 35<br>37998 51<br>37998 82 | 38431 13       | 38431 13       |   |
| 37322 42       | 37322 42       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         |                |                |   |
| 37322 43       | 37322 43       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38431 12       | 38431 12       |   |
| 37322 44       | 37322 44       |   |                |                |  | 37999 19       | 37999 19       | 37998 35<br>37998 51<br>37998 82 | 38431 13       | 38431 13       |   |
| 37322 45       | 37322 45       |   |                |                |  | 37999 05       | 37999 05       | 37998 80                         |                |                |   |
| 37322 46       | 37322 46       |   |                |                |  | 37999 06       | 37999 06       | 37998 53                         | 38             |                |   |

[Based on revisions to the Standard Industrial Classification (SIC) Manual, definitions of some product codes were revised for 1987. Listed below are the revisions to the product codes. The terms published and collected are defined as follows: (1) published refers to the code used in the published reports for 1987 and 1982, and (2) collected refers to the code appearing on the report forms for 1987]

| 1987 published    | 1987 collected    | 1982 published   | 1987 published                   | 1987 collected                   | 1982 published                               | 1987 published                   | 1987 collected                   | 1982 published                            |
|-------------------|-------------------|--|----------------------------------|----------------------------------|--|----------------------------------|----------------------------------|---|
| 38517 04—<br>Con. | 38517 04—<br>Con. | 38517 09—<br>Con.  | 38731 06                         | 38731 06                         | 38737 01                                     | 39153 11                         | 39153 11                         | 39151 13 pt                               |
| 38517 06          | 38517 06          |  | 38731 07                         | 38731 07                         | 38737 02<br>38737 03                         | 39153 12                         | 39153 12                         | 39151 31 pt                               |
| 38517 07          | 38517 07          |  |                                  |                                  |  | 39153 21                         | 39153 21                         | 39151 41                                  |
| 38517 10          | 38517 10          |  |                                  |                                  |  | 39153 31                         | 39153 31                         | 39151 51 pt                               |
| 38517 11          | 38517 11          |  | 38731 11                         | 38731 11                         | 38737 19                                     |                                  |                                  |   |
| 38611 11          | 38611 11          | 38611 12<br>38611 14                                     | 38731 13                         | 38731 13                         | 38736 39                                     | 39154 00                         | 39154 11                         | 39151 13 pt<br>39151 31 pt<br>39151 51 pt |
| 38611 69          | 38611 69          | 38611 67<br>38611 68                                     | 38732 01                         | 38732 01                         | 38732 10<br>38732 22                         | 39314 24<br>39314 25             | 39314 24<br>39314 25             | 39314 23                                  |
| 38611 91          | 38611 91          | 38611 81   | 38732 02                         | 38732 02                         | 38732 14<br>38732 24                         | 39443 46                         | 39443 46                         | 39443 44<br>39443 45                      |
| 38611 98          | 38611 98          | 38611 43<br>38611 99                                     | 38732 03                         | 38732 03                         | 38732 16<br>38732 26                         | 39443 47<br>39443 98             | 39443 47<br>39443 98             | 39443 99                                  |
| 38613 17          | 38613 17          | 38613 27<br>38613 46                                     | 38732 09                         | 38732 09                         | 38732 18<br>38732 20<br>38732 29<br>38732 30 | 39447 16                         | 36629 46                         | 36629 00 pt                               |
| 38613 89          | 38613 89          | 38613 98   |                                  |                                  |  | 39493 01                         | 39493 01                         | 39494 62                                  |
| 38613 97          | 38613 97          | 38613 61   | 39113 11                         | 39113 11                         | 39112 11 pt                                  | 39493 02                         | 39493 02                         | 39494 63                                  |
| 38615 01          | 38615 01          | 38615 11<br>38615 17<br>38615 32<br>38615 37             | 39113 21                         | 39113 21                         | 39112 21 pt                                  | 39495 05                         | 39495 05                         | 39495 99 pt                               |
|                   |                   |  | 39113 31                         | 39113 31                         | 39112 31 pt                                  | 39495 72                         | 39495 72                         | 39495 78<br>39495 79                      |
|                   |                   |  | 39113 41                         | 39113 41                         | 39112 41 pt                                  | 39495 81<br>39495 88<br>39495 89 | 39495 81<br>39495 88<br>39495 89 | 39495 99 pt                               |
| 38615 02          | 38615 02          | 38615 63   | 39113 98                         | 39113 98                         | 39112 98 pt                                  |                                  |                                  |   |
| 38615 03          | 38615 03          | 38615 73<br>38615 74                                     | 39114 11                         | 39114 11                         | 39112 11 pt                                  | 39495 92                         | 39495 92                         | 39495 90 pt                               |
| 38615 04          | 38615 04          | 38615 75   | 39114 21                         | 39114 21                         | 39112 21 pt                                  | 39495 93                         | 39495 93                         | 39495 91 pt                               |
| 38615 05          | 38615 05          | 38615 57<br>38615 64<br>38615 65<br>38615 76<br>38615 81 | 39114 31                         | 39114 31                         | 39112 31 pt                                  | 39495 96                         | 39495 96                         | 39495 90 pt<br>39495 91 pt                |
|                   |                   |  | 39114 41                         | 39114 41                         | 39112 41 pt                                  | 39495 98                         | 39495 98                         | 39495 99 pt                               |
| 38619 00          | 38619 00          | 38619 41<br>38619 43<br>38619 45                         | 39114 51<br>39114 61<br>39114 71 | 39114 51<br>39114 61<br>39114 71 | 39112 98                                     | 39496 01                         | 39496 01                         | 39494 65                                  |
| 38731 01          | 38731 01          | 38734 11<br>38734 12<br>38736 11                         | 39141 41<br>39141 43<br>39141 69 | 39141 41<br>39141 43<br>39141 69 | 39141 66                                     | 39496 02                         | 39496 02                         | 39494 68                                  |
| 38731 02          | 38731 02          | 38734 22 pt<br>38736 13 pt                               | 39142 35                         | 39142 35                         | 39142 34<br>39142 36                         | 39496 03<br>39496 04             | 39496 03<br>39496 04             | 39494 70 pt                               |
| 38731 03          | 38731 03          | 38734 21<br>38734 22 pt<br>38736 12<br>38736 13 pt       | 39142 41<br>39142 43             | 39142 41<br>39142 43             | 39142 61                                     | 39523 00                         | 39523 00                         | 39521 00<br>39522 15                      |
| 38731 05          | 38731 05          | 38736 31<br>38736 32<br>38736 33                         | 39142 55                         | 39142 55                         | 39142 54<br>39142 56                         | 39524 13                         | 39524 13                         | 39522 13                                  |
|                   |                   |  | 39142 69                         | 39142 69                         | 39142 61 pt                                  | 39524 19                         | 39524 19                         | 39522 19                                  |
|                   |                   |  |                                  |                                  |  | 39610 65                         | 39610 65                         | 39610 72                                  |

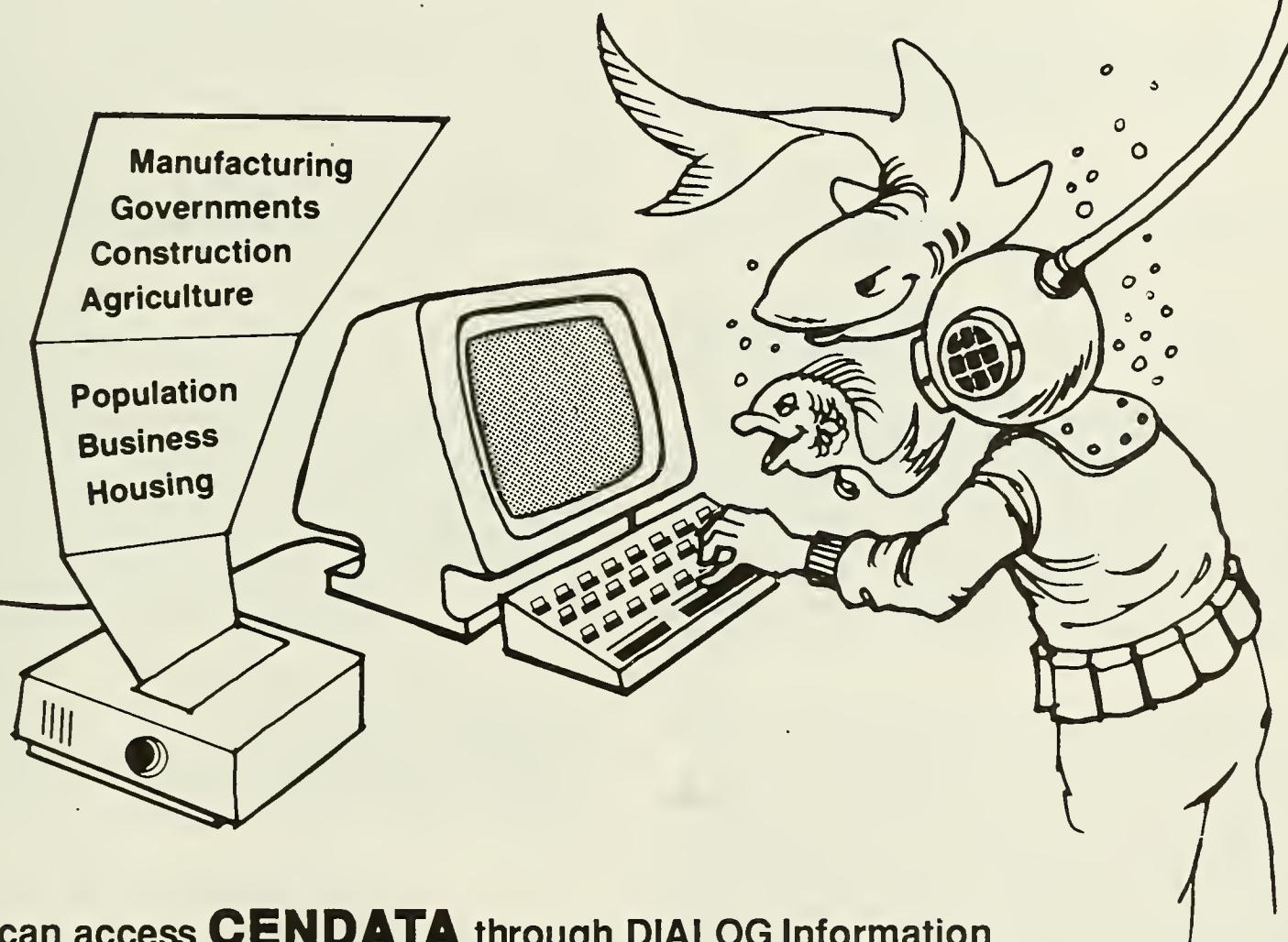


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# PUBLICATION PROGRAM

## 1987 CENSUS OF MANUFACTURES

Publications of the 1987 Census of Manufactures, containing preliminary and final data on manufacturing establishments in the United States, are described below. Publications order forms for the specific reports may be obtained from any Department of Commerce district office or from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.

### Preliminary Reports

#### Industry series—83 reports (MC87-I-20A(P) to -39D(P))

Preliminary industry data are issued in 83 separate reports covering 459 industries. Preliminary summary data for the U.S. and States are released in one report.

### Final Reports

#### Industry series—83 reports (MC87-1-20A to -39D)

Each of the 83 reports provides information for a group of related industries ("dairy products" includes industries for butter, cheese, milk, etc.). Final figures for the United States are shown for each of the 459 manufacturing industries on quantity and value of products shipped and materials consumed, cost of fuels and electric energy, capital expenditures, assets, rents, inventories, employment, payroll, payroll supplements, hours worked, value added by manufacture, number of establishments, and number of companies. Comparative statistics for earlier years are provided where available.

For each industry, data on value of shipments, value added by manufacture, capital expenditures, employment, and payroll are shown by employment-size class of establishment, State, and degree of primary product specialization.

#### Geographic area series—51 reports (MC87-A-1 to -51)

A separate report is being published for each State and the District of Columbia. Each report presents data for industry groups and industries on value of shipments, cost of materials, value added by manufacture, employment, payroll, hours worked, new capital expenditures, and number of manufacturing establishments for the State, MSA's, counties, and selected places. Comparative statistics for earlier census years are shown for the State and large MSA's. Manufacturing totals are presented for each county and for places with significant manufacturing activity. Detailed statistics (including inventories, assets, rents, and energy costs) are presented only in statewide totals.

#### Subject series—7 reports (MC87-S-1 to -7)

Each of the seven reports contains detailed statistics for an individual subject, such as concentration ratios in manufacturing, type of organization, water use in manufacturing, textile machinery in place, distribution of sales by class of customer, manufacturers' shipments to the Federal Government, and a general national-level summary.

#### Reference series—1 report (MC87-R-1)

The Numerical List of Manufactured and Mineral Products includes a description of the principal products and services published in the 1987 Censuses of Manufactures and Mineral Industries.

#### Location of Manufacturing Plants—1 report (MC87-LM)

This report includes data for number of establishments by four-digit SIC industry and by employment-size class for counties, incorporated places of 2,500 inhabitants or more, and zip codes for each State. (This report is available only on magnetic tape and CD-ROM.)

#### Analytical Reports—3 reports (AR87-1 to -3)

#### Exports From Manufacturing Establishments (AR87-1)

This report presents data on exports by two- and three-digit SIC industry groups for the United States and States. Information is presented on value of direct report shipments and estimates of the employment required to manufacture these products. Included are estimates of employment in manufacturing and nonmanufacturing establishments that supply parts, materials, and services for production of manufactured exports.

#### Selected Characteristics of Manufacturing Establishments That Export (AR87-2)

This report presents data on the number of manufacturing companies and establishments that export by major group, State, employment size, and ratios of exports to shipments.

#### Indexes of Production (AR87-3)

The indexes presented in this report are designed to measure the change in physical output of each manufacturing and mineral industry between 1982 and 1987.

### MICROFICHE

Every final published report in the 1987 Census of Manufactures will be available on microfiche.

### PUBLIC-USE COMPUTER TAPES AND COMPACT DISCS

Data from the final industry series, geographic area series, and the Location of Manufacturing Plants report will be available on public-use computer tapes and compact discs-read only memory (CD-ROM). These tapes will provide the same information found in the final reports. Computerized data products are available for users who wish to summarize, rearrange, or process large amounts of data. These products, with corresponding technical documentation, are sold by Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, DC 20233.

### OTHER ECONOMIC CENSUSES REPORTS

Data on retail trade, wholesale trade, service industries, construction industries, mineral industries, transportation, enterprise statistics, minority-owned businesses, and women-owned businesses also are available from the 1987 Economic Censuses. A separate series of reports covers the censuses of outlying areas—Puerto Rico, Virgin Islands of the United States, Guam, and the Northern Mariana Islands. Separate announcements describing these reports are available free of charge from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.











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